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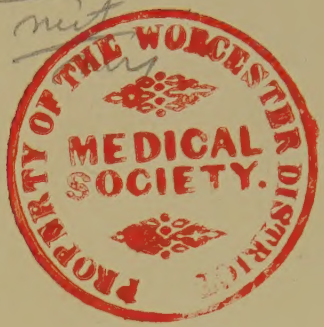

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AN INQUIRY

INTO THE

CURABILITY OF CONSUMPTION

ETC.

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AN INQUIRY

INTO THE

CURABILITY OF CONSUMPTION

THE PREVENTION

AND THE

PROGRESS OF IMPROVEMENT IN THE TREATMENT.

BY

JAMES TURNBULL, M.D.

PHYSICIAN TO THE LIVERPOOL ROYAL INFIRMARY.

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LONDON
JOHN CHURCHILL, NEW BURLINGTON STREET.
1859

PREFACE TO THE THIRD EDITION.

THIS Edition has not only been revised and the greater part re-written, but the Author's extended experience has enabled him to enlarge and add to this publication so considerably, that it may almost be regarded as a new work. It will be found that the principal causes of the disease have now been examined, and that the light of recent statistical facts has been brought to bear upon this branch of our inquiries, so as to show that Consumption is a disease much more under the control of means, which we have the power of adopting for its prevention than is generally believed. It will also be found that the Preventive Treatment has been examined in a new chapter, and that much additional matter has been added in regard to the Varieties of Consumption, and its Relations to other diseases. In the chapter on Curability, a series of nineteen cases has been given, several of which have been previously published in the Second Edition, or in the Report, which subsequently appeared in 1853, "On the Progress of Improvement in the Treatment of Consumption and other Pulmonary and Laryngeal Diseases." Additional cases have, however, been inserted in this Edition, and later particulars given of several of

those contained in the Report referred to. The chapter on the Treatment has been much extended.

The views propounded, have been illustrated throughout the work by frequent reference to cases which have occurred in the Author's practice; and his object has been to render the work as far as possible a practical treatise, for the use of those engaged in the Prevention and Treatment of one of the most common and most dreaded of the diseases to which mankind is liable.

LIVERPOOL:
May, 1859.

PREFACE TO THE SECOND EDITION.

THIS publication originally formed a paper which was read to the "Liverpool Medical Society" on the 24th of January of the present year. The subject was deemed of so much interest, that the discussion was adjourned till the following meeting; and the paper was afterwards published in the "London Journal of Medicine." The demand for the copies reprinted from the Journal was such as to lead me to publish the present enlarged Edition, which will be found to contain several additional cases.

The Curability and Treatment of Pulmonary Consumption are undoubtedly the two most interesting and practical points of view in which the subject can be examined. The former has, considering its importance, received very little notice in many systematic works, though several valuable papers have appeared upon it in the medical periodicals of this country and the continent. It is most desirable, however, that all who are interested in this disease should be made aware, how far the early adoption of judicious means affords a reasonable hope of recovery; and that medical men should make themselves acquainted with the indications of Treatment, furnished by an examination of the subject in reference to Curabi-

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AN

INQUIRY

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CHAPTER I.

PRELIMINARY OBSERVATIONS. — IMPORTANCE OF INQUIRY.

ATTENTION DRAWN TO CONSUMPTION AND INTEREST OF LATE AWAKENED IN IT. — NEW OBJECT SOUGHT FOR IN THE TREATMENT. — THREE ASPECTS OF THE DISEASE, PREVENTION, CURABILITY, TREATMENT. — OPINION OF ANCIENT PHYSICIANS AS TO CURABILITY. — PREVALENCE OF CONSUMPTION IN ENGLAND. — GREAT VARIATION IN ITS COMPARATIVE FREQUENCE IN DIFFERENT DISTRICTS. — DISEASE SHOWN TO BE TO A GREAT EXTENT PREVENTABLE. — NATURE OF TUBERCLES. — THE CONSTITUTIONAL STATE WHICH INDUCES CONSUMPTION. — CHEMICAL COMPOSITION OF TUBERCLE. — MICROSCOPICAL RESEARCHES.

Pulmonary diseases constitute a very large section of those which come under the observation of the physician, and consumption is the most common and the most important of them. That it is a very intractable and fatal disease is also too well known; and till within a very recent period, not more than ten years, it was considered by the profession as well as the public to be a hopelessly incurable disease, altogether beyond the reach of remedial agents. Previous to that time, and even when the first edition of this work was published, many medical men were but little disposed to receive favourably any facts tending to prove the possibility of recovery from con-

sumption, even in its early stage; their views of the treatment being limited almost exclusively to the palliating of the cough and other urgent symptoms, but without any definite hope of materially retarding the advance of the disease. The treatment of consumption and the nature and causes of tubercular diseases, are subjects which have, since then, received a large share of the attention of medical men,—a fact evinced by the publication of several works and of many valuable papers and lectures in the medical journals. And I may venture to assert that while those members of the profession, whose opportunities of examining the subject give to their opinions the best claim to our respect, now fully admit the possibility of recovery in the earlier stages, it has become with all an additional object in the treatment to suspend or arrest the progress of the disease. In the introduction of this new object, which can scarcely be said to be in any case beyond the range of possibility till the means in the hands of the profession have been fully and perseveringly tried, we have a strong proof of progressive improvement in the treatment; and we have good reason to hope and believe, from some new light recently thrown upon the causes of tubercular diseases, that this subject is by no means so unfruitful as to be incapable of yielding adequate useful returns for patient investigation.

Recent investigations have shown that a great amount of pulmonary disease and consumption is produced among the people of this country by their habits, occupations, and mode of life; and in this volume I shall not only again examine the subject in its two great aspects, — the curability and the treatment,—but likewise in respect to the removable causes, that is, the prevention of consumption; and I shall have occasion to show that there are many important facts bearing on this branch of the subject, and clearly brought out by recent statistical inquiries, which admit of useful practical application in

the treatment of those affected with consumption or predisposed to the disease.

When we inquire into the opinion of ancient physicians, we find that it was in favour of the occasional curability of consumption. This opinion is of some value, though it was formed from observation of the symptoms only; for they were unacquainted with the mode of examining the chest with the stethoscope, which has been introduced of late years, and which has assisted so much in furnishing accurate knowledge with reference to the subject we are about to examine.

Bayle, who was a great authority at the beginning of this century, considered recovery impossible; and I believe that the general impression as to the hopeless nature of the disease may be traced back to the weight which his opinion has had with medical men. Yet it is a point worthy of notice, and to which I shall again direct attention, that an unbiassed examination of the cases he has himself published ought to have convinced him of the incorrectness of such a sweeping conclusion.

The opinion of medical men on this subject has, in some instances, been favourably influenced by their personal experience. Thus, Dr. Young had all the symptoms of consumption, in his youth, but recovered; and, in the work which he afterwards published, he expressed his belief in the possibility of recovery in a limited number of cases. The celebrated French physician, Broussais, complained several times during his life of feeling something, at the summit of the right lung, which made him believe that there were tubercles in that part. And when he died, at an advanced age, it was found that there was adhesion at the top of the right lung, and a depression, which contained a small cretaceous mass, surrounded by dense black matter. These appearances proved the correctness of the opinion he had entertained, and we shall see that they afford

undoubted evidence that he had escaped from consumption in the way in which recovery most frequently occurs.

The profession, as well as the public, have been so strongly impressed with the belief that the disease is necessarily fatal, that any one who would have maintained the opposite opinion would, until very recently, have been looked upon only in the light of a boasting pretender. Notwithstanding this, pathological investigations have shown, in the clearest manner, that recovery often does take place from this disease; and ever since the able investigations of Laennec proved that it may occur from the spontaneous efforts of nature, subsequent pathologists have been accumulating facts, proving more fully the correctness of his views and statements.

I have always been desirous of tracing how nature brings about spontaneous recovery, and I may quote the following extract bearing on this point, from the introductory address I delivered at the opening of the Liverpool Royal Infirmary Medical School (Session, October, 1852). "We have reason to expect that improvements will continue to be made in practical medicine by observing closely how nature unaided effects the cure of some diseases. 'It is the character of the true philosopher to hope all things not impossible, and to believe all things not unreasonable,' (Herschel) — and we should seek to follow wherever we are able to trace her footsteps. The cure of aneurism by ligature of the artery, and the still more advanced method of treatment by compression, are based upon the process by which nature has in some instances effected the removal of the disease without any assistance from art. Close observation of her operations has also incontestably proved that she succeeds in no inconsiderable number of cases of consumption in arresting, and even, in some instances, in effecting perfect

recovery in a disease which had long been set aside as utterly beyond the reach of medical treatment."

Auscultation and percussion have done much to strengthen the light derived from pathological investigation, by enabling us to separate those diseases from consumption which most nearly resemble it, and to trace the progress towards recovery, as it may be observed in living individuals.

We can scarcely over-estimate the importance of our present inquiries, when we consider the extent to which pulmonary diseases prevail, and the very large amount of mortality they occasion. It would appear that they cause nearly one quarter of all the deaths which occur annually in England and Wales. The average number from consumption alone has been calculated by Mr. Simon to be 57,982, a greater number than is caused by all other pulmonary diseases put together, the number of deaths from which amount to 50,273. Besides this we should observe that consumption selects its victims, not, like some diseases, from the extremes of life—from the feeble periods of childhood and old age — but chiefly from those who are in the pride of youth, or in the prime and vigour of life. This is an important fact, which should stimulate our inquiries, inasmuch as it would seem to indicate some radical but not irremovable defect in our social system, and our knowledge of the causes of the disease; for it cannot be supposed to be a necessary condition of our race that a chronic disease, essentially one of debility, should prevail to this extent, and cut off such a number of persons during the most vigorous period of life. The greatest number of individuals of both sexes who sink under this disease, are between the ages of twenty-five and thirty-five, and, next to this, between fifteen and twenty-five,—the periods of life when, therefore, the greatest vigilance should be exercised in the prevention

of the disease, especially in those hereditarily predisposed.

Dr. Greenhow has shown, in a very important parliamentary paper, which throws much new light on the causes of consumption, that pulmonary diseases prevail in some districts of England to a far greater extent than in others. This is proved by the following table, which shows the number of deaths per 100,000 in the eleven registration divisions of England and Wales.

	Male per 100,000	Female per 100,000
London	758	593
North-western counties	694	674
West midland counties	586	547
England and Wales	569	535
Yorkshire	535	523
Monmouthshire and Wales	526	491
South-western counties	509	459
South-eastern counties	498	475
Eastern counties	489	516
South midland counties	477	485
Northern counties	469	457
North midland counties	465	500

From this table we find, adding the numbers in the two sexes together, that pulmonary diseases are most prevalent in the North-western counties' division, embracing Lancashire and Cheshire, and least so in the northern counties, embracing Durham, Northumberland, Cumberland, and Westmorland. From an examination I have myself made, I also find that, though the number of deaths from consumption does not follow the numbers in this table in exactly the same proportion, in the northern counties, where there is the smallest number of deaths from pulmonary diseases, there is the least number from consumption; and in the north-western, where the number is highest, there is likewise the greatest number of deaths

from consumption, showing that there is a close, though not a perfectly uniform relation between them.

When small districts are compared, it has been found that the rates of deaths from consumption vary to an extent that few persons are prepared to expect — from 134, 144, 165, 173, and 183 ; the numbers in some of the most healthy districts to the high rates of 390, 407, 409, 421, and 445 in some of the unhealthy ones. When we thus find that in one of the most unhealthy districts, nearly three times as many persons die of consumption as in one of the most healthy, we may naturally hope to obtain much new light as to the causes and means of preventing consumption from an examination of the relative conditions of the inhabitants. Such an examination has already been made by Dr. Greenhow, with no inconsiderable amount of success, though there is much yet remaining to be done, and Mr. Simon, in his introductory paper, has stated the general results as follows:— The industrial employments of the people exercise a most important influence in the production of pulmonary disease, and the greatest contrasts are found in comparing the agricultural and manufacturing populations. In proportion as the male and female population are severally attracted to in-door branches of industry, in such proportion, other things being equal, their respective death rates by phthisis are increased.

It has been the commonly received opinion, that the zymotic class of diseases, embracing cholera, fevers, and contagious diseases, are almost the only ones which we have the power to prevent by attention to sanitary laws ; but in a subsequent chapter we shall have occasion to show that the wide difference in the rate of mortality from pulmonary diseases in different districts, and amongst different classes, is a proof that there is likewise a wide field for combined exertion on the part of the public as individuals, on the part also of medical men, and likewise

of those who devote themselves to sanitary improvements, in order to bring about a diminution of the large annual mortality produced by the chronic tubercular class of diseases, of which consumption is far the most common, and therefore the most important.

Nature of Tubercles and constitutional State.—Pulmonary consumption is a disease characterised by the deposition in the lungs of small grey or yellowish bodies, called tubercles, but in some rare cases tubercular matter is diffused more generally through the tissue of the lungs. When first visible, these little bodies are tough whitish granulations, of the size of a pin's head or a grain of millet-seed, and hence in this, the first stage, they are called miliary tubercles. When they increase, they progressively acquire the size of a hemp-seed or a pea, and they sometimes coalesce, so as to attain the size of a walnut or an egg. In this stage they become of a soft, cheesy consistence, and are called *crude tubercles.* They act upon the lung just as a thorn or other foreign body would: they irritate the part, and excite inflammation and suppuration around them, during which the tubercular matter itself becomes soft, and is transformed into mixed tubercular and purulent matter, which opens into the air-passages and is spat up, leaving a void space or cavity, which, like other ulcers of a scrofulous nature, continues to suppurate for a long period, but, in some fortunate cases, heals, leaving a cicatrix or scar in its place.

The fatality of the disease has arisen, not from anything peculiarly noxious or malignant in the nature of tubercle itself, as is the case with cancer, the cells of which propagate themselves, but from the number of the tubercles being so great, that the lungs are destroyed, and the strength of the unfortunate patient wasted; whilst the tendency to the formation of the tubercular bodies, not only in the lungs, but in other organs, is

increased by the debility. We are encouraged, therefore, to attempt the removal of the tubercles, by the fact of their not being of a malignant nature; and I shall have occasion to show that, in the great majority of cases where recovery takes place, they go back instead of suppurating, and are either absorbed, or transformed into chalky or stony bodies.

Tubercular disease is not peculiar to the lungs, but occurs in many other organs, especially the glands, where recovery has been distinctly traced out in the same ways; and it is caused by a peculiar debilitated or cachectic state of the system, which, in the opinion of almost all medical men, is identical with the scrofulous constitution. This scrofulous or tubercular state being the cause of the formation of these bodies, it follows that its removal must constitute an important indication in the prevention as well as treatment of consumption in every stage. What, then, is this constitutional state which causes the formation of these tubercular bodies? I believe that it is a state of imperfect nutrition: a condition in which the digestive organs are unable to manufacture from the food a perfect kind of blood, capable of nourishing every part, without allowing some imperfectly formed particles to escape at the same time. The digestive organs are not, however, the only ones at fault. Their office is chiefly to dissolve the food, and it is in the lungs, through which organs the chyle or fluid newly formed from the food has to pass, in order to be converted into perfect blood by the action of the oxygen of the air, that the process is completed. This is the function which is chiefly at fault, and we find that tubercular particles are arrested in the lungs, and deposited there in a far greater number of instances than in any other part.

Some are born with a much stronger predisposition to tubercular deposit than others, but the long-continued operation of debilitating causes, among the chief of which

may be reckoned impure air, insufficient or unwholesome food, prolonged mental depression, sedentary habits, privation of the natural stimulants,—warmth and light; and debilitating excesses of all kinds, are sufficient to produce the disease in some of the most healthy persons, and even in many of the lower animals. Consumption is then essentially a disease of nutrition; and all these causes act by directly or indirectly preventing perfect digestion and assimilation of the food, and its conversion into blood completely vitalised and organised. I lean strongly to the humoral pathology, and I may advert to some points of resemblance between consumption and two other diseases, chlorosis and scurvy, which also arise from perverted nutrition, and in which the blood is the part more particularly diseased. In consumption and scrofula, we have seen that there is a debilitated state of the system, and an escape of solid tubercle from the blood. In scurvy there is extreme weakness, and escape of the fibrin and red globules into the cellular tissue. In chlorosis, a disease of young females, characterised by debility, irregular menstruation, and a variety of nervous and dyspeptic symptoms, we have a deficiency of the red globules, and an escape of the aqueous part in many cases into the cellular tissue. In each of these diseases we find it necessary to direct our attention to the nutritive functions. In scurvy, the use of vegetable acids, or succulent vegetables, has an efficacy scarcely known to medical men, who have not seen the disease among the sailors of a large sea-port; as the general use of antiscorbutic diet has almost eradicated this disease, once so formidable to our ancestors. In chlorosis we give some preparation of iron, in order that it may be absorbed by the digestive organs, and supply the deficiency in the quantity of iron necessary for the formation of the red globules of the blood. Lastly, in scrofulous diseases we now give oil, which is

assimilated, and appears to have considerable power in removing the tendency to the deposit of tubercle.

Chemical Composition of Tubercle. — Before proceeding with our inquiry as to curability, let us ascertain, as briefly as possible, what light has been thrown on the pathology of tubercle, and the changes it undergoes during absorption and transformation, by recent chemical and microscopical researches. As regards the blood itself, from which it is an exudation or secretion, the only change of any importance which seems to have been yet discovered, is an increase in the quantity of fibrin; but this does not seem due so much to the tuberculous diathesis, as to the inflammation which accompanies the softening of tubercle. The proportion of blood corpuscles is generally below the standard of health; but Becquerel and Rodier* have shown that this is a change common to all chronic diseases, and much more marked in chlorosis.

Tubercle has not yet been detected in the blood by chemical analysis or microscopical examination, but this scarcely renders its presence there less probable; seeing that it differs but little in chemical composition from other animal matters, and could be present only in very minute quantity.

Analysis of tubercle itself has shown that it consists chiefly of albumen, with a little casein and fibrin, a considerable quantity of fat, and some extractive matters, probably the kreatine and kreatinine discovered by Liebig† in the muscles and urine. Dr. Madden thinks that the abundance of extractive matters shows that there is either diminution of healthy excretion, or undue activity of the decomposing forces. The former he has taken as an indication for the use of means to promote the function of the excreting organs—the skin, liver, and kidneys. Crude yellow tubercle contains only

* Recherches sur la Composition du Sang.

† On the Chemistry of Food.

about 2 per cent. of earthy salts, and 98 per cent. of animal matter; but, when it has undergone the cretaceous transformation, the proportions are reversed, the quantity of animal matter being about 3 per cent., and the remainder consisting of earthy salts, carbonate and phosphate of lime, with a little muriate of soda.

Tubercle being an exudation from the blood of a part of the liquor sanguinis, imperfectly vitalised, and therefore less highly organised than the fibrinous exudations of healthy inflammation, we naturally expect to find—what chemists have discovered in regard to its ultimate analysis—that it differs very little in composition from the proteine compounds.* These facts, it must be confessed, are almost negative, as regards any practical value.

Microscopical Researches.—These have thrown more light on the pathology of tubercle; and we have thus derived some information as to its primary seat, its structure, its relations to surrounding parts, and to other deposits of a healthy or morbid character. Dr. Carswell† thought that the air-cells were the usual seat of tubercles in the lungs; and that, whenever mucous membrane formed a part of an organ, it was either the exclusive seat, or more extensively affected than any of the other tissues. There seems to be much reason to believe, that the air-cells are the common, though not the exclusive, seat of tubercular deposit. Mr. Rainey‡ has described its appearance in the air-cells, and says that it may sometimes be seen filling only one part of a single cell. He has endeavoured to show, that the cells are not lined with mucous membrane; but the fact observed by Hassall, of the epithelium extending into them, appears to show that they are lined by this membrane. Different microscopical observers have shown, that it may also be deposited in the

* Bennett, Northern Journal, 1846.

† Illustrations of the Elementary Forms of Disease.

‡ Medico-Chirurg. Trans. 1845.

intercellular tissue between the air-vesicles; in fact, anywhere external to the vessels; and Dr. C. J. B. Williams thinks it probable that it may even form within the blood-vessels themselves.

My own observations lead me to believe that it may be deposited in all these situations. We can conceive, that when the tendency to the deposition is not very strong, it may be thrown out as an excretion, and mix with the mucus in the air-vesicles; that, in other cases, where the diathesis is stronger, it may escape from the vessels into the intercellular tissue; and that, when it is most intense, it may not only form in these situations, but even be arrested in the minute capillaries, and thus contribute to the congestion so common in pulmonary consumption. I examined a highly scrofulous young man, in whose body tubercular matter was very abundantly deposited in various organs. One lung was almost saturated with miliary tubercles, and the fluid exudation was filled with the characteristic granules. In this case I believe that it existed in all these situations, and that the congestion of the lung which existed was produced in a great measure by the tubercular matter blocking up the vessels. I had also an opportunity of seeing an abundant secretion of tubercular matter in the ureter and pelvis of the kidney of a phthisical patient; exemplifying the strong tendency noticed by Dr. Carswell to the excretion of this matter on the surface of mucous membrane.

Microscopical examination of tubercular matter has shown that it consists of corpuscles, which are characteristic of tubercle, and of granules and minute molecules. The corpuscles have no nuclei, and are considered to be undeveloped cells, which approach more or less nearly to the exudation or plastic cells of healthy inflammatory deposits. The miliary tubercle has some appearance of cells and fibres, but the crude yellow tubercle has no appearance of organisation, and, during softening, the

corpuscles swell, burst, and discharge granules. Dr. Williams' view—that lymph, tubercle, and pus are only modifications of each other—shows how nearly tubercular deposition and inflammation must approach each other; and pathologists seem now agreed that they are closely allied processes, both being modified states of nutrition. Growth, nutrition, inflammation, and scrofulous diseases, are, observes Dr. Addison, analogous phenomena.

Besides the objects already described, there are also seen in tubercles the filamentous remains of the air-cells, fat globules, which increase in quantity as the softening takes place, pus, and other exudation products of inflammation, epithelium cells; and, in cretaceous tubercles, large dark particles, and crystals of cholesterine.

Of these facts, furnished by microscopical examination, perhaps the most important, in reference to our present inquiry, is that of the tubercular corpuscles being most nearly allied to the fully developed cells of healthy inflammatory products, from which they appear to recede, and assume more of a granular aspect, in proportion as they become yellow and cheesy, or soften. "The miliary tubercle," Dr. C. J. B. Williams observes *, "differs from fibrin, not in kind, but in degree of vitality and capacity of organisation;" and this proves to us what experience had previously taught — the importance of removing the complication of inflammation or congestion of the lungs, in the prevention, as well as treatment, of phthisis.

Common observation is sufficient, without any chemical or microscopic examination of tubercles, to show that it is a variable morbid matter, which has in some cases, where the constitutional tendency to the disease is generally strong, and the vital powers feeble, a proneness to break down rapidly, whilst in others the reverse is the case, and the tubercular deposit causes no irritation, and

* Principles of Medicine, p. 386.

undergoes no change for a long period. It is in the latter description of cases that we are enabled, by a well-devised method of treatment, embracing the removal of the causes and the improvement of the constitutional powers by hygienic, as well as medical means, to arrest the progress of the disease, and to contend with it more or less successfully.

CHAP. II.

THE CAUSES OF CONSUMPTION.

HEREDITARY TRANSMISSION. — INFLUENCE OF SEX. — TOWN INFLUENCES. — IN-DOOR AND OUT-DOOR EMPLOYMENT. — OCCUPATION. — COTTON, SILK, AND WOOLLEN MANUFACTURE. — PROPHYLACTIC INFLUENCE OF LATTER. — MINING. — INFLUENCE OF LEAD, TIN, COPPER, AND COAL MINING. — SOLDIER'S LIFE IN BARRACKS A POWERFUL CAUSE OF CONSUMPTION. — CONFINEMENT. — DEPRESSING MENTAL INFLUENCES. — DEFECTIVE DIET, INSUFFICIENT CLOTHING. — COLD AND DAMP. — INTEMPERANCE AND IRREGULARITIES OF LIVING. — EFFECTS OF OTHER DISEASES.

It is a most difficult matter to appreciate rightly the influence of the various causes which are known to have an effect in the production of tubercular disease of the lungs. In various systematic treatises they are fully set forth; but as the different causes act in combination with each other, it is by no means easy to discover how much of the injurious influence of any single cause is due to itself separately. The inquiry is, however, a most important one, as it has a direct practical bearing on the prevention and treatment of the disease. In carrying it out with a view to these practical objects, I shall confine myself as much as possible to the investigation of those causes, the influence of which can be appreciated with some degree of exactness, and proved by reference to statistical facts, such as those recently brought to light by Dr. Greenhow's paper, and the Report of the Army Commissioners.

Hereditary Transmission.— This is an important predisposing cause which is constantly forcing itself on the

attention of those engaged in the treatment of pulmonary disease. When we consider how few persons there are who have any exact knowledge of the causes of death of even their near relatives, and that many are willing to conceal, even from themselves, the existence of any hereditary taint, it is not surprising we should find that those who have investigated this subject numerically, have made statements as to the influence of hereditary transmission which are widely different. It would appear to have been traced in about 24½ per cent. of the cases admitted at the Brompton Hospital for Consumption, and out of 1000 analysed by Dr. Cotton, the influence of hereditary taint was proved in rather more than one-third. I have observed that the liability to tubercular disease is transmitted in two distinct modes, which may sometimes be observed separately, but are much more frequently seen acting together. One of these is the transmission of the constitutional tendency to the disease which, if manifested in infancy or childhood, does not show itself so often in the lungs, but in tubercular affections of the brain or its membranes, or tubercular deposits in the glands or the bones, or in scrofulous ulcerations, and affections of the eyes, &c. Along with the constitutional tendency there is often combined the other mode of transmission, which is a local weakness, a weakness, for example, of the lungs, which in early life, and in those free from the constitutional taint, may give a liability to bronchial and other simple affections of the lungs, but which, if combined with the tubercular taint, is very apt at a later period to produce the development of consumption, if the individual be exposed to the exciting causes.

It has been stated that the father most frequently transmits the disease to the sons, and the mother to the daughters; but I believe that where one parent only is tainted, the disease is transmitted in a very nearly equal ratio to both sexes of the offspring. The liability to the

disease is of course immensely increased when it is derived from both parents,—a fact so well known to insurance companies, that most of them reject such lives, even though there may be every appearance of health in the individual. When a parent is actually affected with tubercular disease of the lungs, the tendency to the disease must necessarily be greatly increased in the offspring, and tubercles sometimes exist at birth even, when the mother is consumptive. I have had many opportunities of observing how it has fared with infants born of tubercular mothers; and, where the disease has been in an active condition, I can scarcely recall an instance in which they have not been cut off within the first two years. Though they have often had an appearance of health, it has seldom been retained long, and they have frequently died from convulsive attacks within a few months after birth, or during dentition.

Sex.—It would seem that females are more liable to consumption than males. The number of women that died of this disease in England and Wales was 26,986 in 1849, and the number of men 23,312. The proportion of men, however, who die of other pulmonary diseases is greater than that of females, and it would seem that whilst men are more liable to acute pulmonary diseases, women are more subject to chronic tubercular affections. That this greater liability does not arise simply from difference of sex, but from the habits, occupations, and more sedentary life of females, is proved by the fact, that in many districts and towns the relative proportion is reversed, the male death rates from pulmonary diseases exceeding the female. In many instances, too, we shall see that the cause of this may be traced to the fact of the women being employed in some branch of manufacture, the prejudicial influence of which may thus be pretty correctly estimated.

In London the male death rate from pulmonary diseases

is 758, the female being only 593, and it can also be shown that consumption is more common amongst the men than the women. At the Brompton Hospital the proportion of male patients is 61 per cent. to 39 per cent. of females. There is the same preponderance of consumption in the male population of most of the large towns where the females are not engaged in some kind of manufacture which has a disturbing influence. On the other hand, there are many towns and districts where the females are largely engaged in such manufactures as silk, lace, cotton, and straw plait, in which we find the female pulmonary death rate much higher than the male rate; and it can be shown that in almost every instance such increase is due to consumption, proving that in-door occupations have an injurious influence. Above thirteen per cent. of the females in Cheshire are engaged in the silk and cotton manufactures, and the female death rate exceeds the male in the proportion of 593 to 558. In the towns of Leek and Macclesfield, where the silk manufacture is carried on, it greatly exceeds the male death rate. In Leicester and Nottingham, where a large proportion of the female population is employed in manufactures, the female mortality from pulmonary diseases exceeds the male; in the former in the proportion of 549 to 488, and in the latter in the proportion of 542 to 435.

There are also some small country towns where many of the females are engaged in such sedentary occupations as lace making, in which a manifest increase is thus produced in the mortality from pulmonary diseases amongst the females. Towcester is one of these, in which the male pulmonary death rate is 475, whilst the female is no less than 573. Here we have not only a reversal of what is common throughout England and Wales, but it has also been ascertained that this excess of pulmonary diseases in the females occurs in adult life, and that it is produced by consumption.

Dr. Greenhow has found that in purely agricultural districts the female is higher than the male pulmonary death rate, and he has also found, from comparing eight of the most healthy districts with eight of the most unhealthy, that in the healthy ones the female mortality is one-eighth more than the male, the converse being the case in the unhealthy ones. From the first of these facts we may infer that, in agricultural districts, the men are employed in healthful out-door occupations, whereas there is something injurious in the habits of the women, or in their dwellings; and from the second fact, showing that the insalubrious influences act most on the men in the unhealthy districts, we must infer that these influences are connected with their employments and habits, and do not arise exclusively from unwholesomeness of the dwellings.

Town Influences.—It has been ascertained by Mr. Neison that the agricultural labourer is the longest lived of all classes of the community. He is not the best fed, clothed or housed, but the one condition in which he differs from all other classes is the amount and variety of exercise he takes in the open air. On the other hand, it is a well-ascertained fact that the duration of life is curtailed by residence in towns; and it now appears also that there is no class of diseases in which a more decided increase is produced by town influences than those of the lungs, amongst which consumption stands pre-eminent. In fact, the relation between the pulmonary death rate and the amount of consumption is so close, that we may take the pulmonary death rate as a sufficiently accurate means of judging of the prevalence of consumption. Glendale, in Northumberland, is the healthiest country district in England, and it is also the one in which there is the smallest number of deaths from pulmonary diseases. The number is 216 per 100,000 annually, and the comparison between this and the number in London,

which is 675, gives us a vivid idea of the effect of town influences, which are even more powerful in the towns of Manchester, Liverpool and Bristol, the rates of which are still higher.

Dr. Greenhow has made a comparison between eight urban districts where the greatest number of persons die annually of pulmonary diseases, and the eight rural districts where the numbers are smallest, and the difference, which furnishes an accurate and comprehensive means of judging of the pernicious effects of town influences, is thus seen to be very great. The rate of the urban or unhealthy districts, embracing Liverpool, West Derby, Manchester, Salford, Chorlton, Birmingham, Blackburn, and Leeds, is 811, whilst for the rural, embracing Bootle, Builth, Easington, Garstang, Glendale, Haltwhistle, Houghton-le-Spring, and Romney Marsh, it was 322. We see here that pulmonary diseases are no less than two and a half times more numerous in the unhealthy town districts than in the healthy rural ones; the rate for all England and Wales standing between these two rates at 552.

The effect of town influences, though always apparent, is by no means uniform. This is at once seen in comparing the death rates of Bristol and Hull. Though the total deaths in Hull, from all causes, exceed those in Bristol, and these two seaports are not materially different in respect to size and density of population, we find that there is a wide difference in the amount of pulmonary disease, which in Bristol, the healthiest town in other respects, is at the rate of 851, and in Hull only 556. This proves that there is no fixed relation between the size of towns and the prevalence of pulmonary disease, or between the general and the pulmonary death rates. It has also been shown, by a comparison between the pulmonary death rates and the density of the population of these towns, and those of Gravesend and Ipswich,

that there is an absence of definite relation between the population density and the pulmonary death rate. Whilst, therefore, town influences, which must embrace impurity of the atmosphere from smoke, the unhealthy emanations always existing in crowded localities, imperfect ventilation of houses and factories, and the more sedentary occupations of an urban population, there are other circumstances besides these affecting the inhabitants of some towns, which require further and more minute investigation. To the influences already mentioned may be added the effect produced by the absence of the physical and mental stimulus afforded by variety of scene, and especially by rural prospects; the weariness caused by the monotonous character of many occupations; and, not least, the cares and anxieties of life; all of which are causes which, it has been justly observed, help to swell the catalogue of illness, and add to the register of deaths in great cities.

Occupation.—Those occupations which call for much exercise in the open air are the most healthy; whilst, on the other hand, we have seen, from some of the preceding facts, that in-door occupations have a direct and obvious tendency to cause consumption. The relative influence of in-door and out-door employments on this disease may be still further shown by reference to the statistics of the Brompton Hospital for Consumption: 63 per cent. of the male patients admitted followed in-door employments, only 30 per cent. out-door occupations, and the remainder mixed employments. All the females were engaged in in-door employments. Dr. Cotton has calculated, from his own experience, that consumption is five times as frequent in those engaged in in-door work as in those employed in active out-door pursuits. Those employments are most injurious which have an effect in restraining the functions of respiration, by preventing the free action of the muscles of the chest, and hence one reason of the

prevalence of the disease to so great an extent among tailors, shoemakers, printers, milliners, and clerks.

Dr. Greenhow has furnished some statistical data which assist us in estimating the effects of certain kinds of manufacturing occupations. He states that the pulmonary death rate is usually excessive in towns where both males and females are largely employed in the manufacture of textile fabrics, but that the difference in mortality of the sexes is rarely great.

The pulmonary death rate is high in all the large cotton manufacturing towns, and that factory labour tends to generate consumption is conclusively shown by the fact that though the pulmonary mortality of Manchester is lower than that of Liverpool for the whole period of life, it is during adult life greater in Manchester in both the sexes than in Liverpool.

The effect of the silk manufacture in producing a high rate of female pulmonary mortality in Leek and Macclesfield, and of the lace and other kinds of manufacture in raising the female above the male death rates in Nottingham, Leicester, and other places, has been already adverted to.

The influence of the woollen manufacture on those engaged in this kind of occupation requires more particular notice, as it would seem to be not only less injurious than others, but to produce, through the action of the oil used in many of the processes, a positively beneficial effect upon the health, and which, it has been affirmed, is prophylactic against scrofula and consumption. Dr. Greenhow states that, with the single exception of Leeds, where, however, other kinds of manufacture of a more or less pernicious nature are carried on, the mortality in the districts of the woollen manufacture is rather below what prevails in the cotton and silk districts. In Bradford, which is a woollen district, the pulmonary death rate is 607, whilst in Preston, an exclusively cotton district, it is

722. It is, however, in the woollen factories of Scotland that the prophylactic effect of this kind of employment has been more particularly observed; and to Dr. Simpson is due the credit of making known this fact, and tracing the cause to the beneficial operation of the oil used in some of the processes.

Dr. Simpson has collected the concurrent testimony of many medical men practising in the woollen districts of Scotland on this subject, and I condense from his paper the remarks of Dr. Dyce. With reference to the extreme rarity of consumption among the wool-mill girls, this is a fact with which all here have long been familiar, so much so that seldom or ever is a consumptive tendency met with among the wool-mill girls. Any one accustomed to see the women of the cotton and wool mills can generally tell from their appearance to which mill they belong. The cotton-mill girls are generally, though healthy-looking, pale and bleached, whereas the wool girls are rosy and fat. He also states that it has been customary, when any young girls have been noticed whose looks indicated delicacy, to recommend them to change the mill, and that a remarkable effect has often been noticed from a few months' work in the wool mill, — from the pale pasty look they have become healthy and plump. Dr. Simpson states, that "the great difference and peculiarity in woollen, as compared with cotton mills, consists in the fact that while the hours, the occupation, &c., are much the same in each, in the woollen mills a very large quantity of oil is used, and the bodies of the workers are brought in various ways freely in contact with it. It is, I believe, in this one item that the great difference between cotton working and wool working consists; and it is to this material, the oil, as freely used in some of the processes of the wool factories, that the operatives themselves universally, and, as I believe, properly attribute the salutary nature of their occupation." He has also pointed out

that the degree of exemption among the operatives is by no means equal in all the processes of the manufacture, but is regulated by the more or less oily nature of the department of work in which they are engaged.

Occupations producing Inhalation of irritating Particles.—There are many occupations which, it can be shown, have a direct tendency to cause chronic pulmonary disease by the local irritation they produce on the lungs, in addition to the injurious effect which is often at the same time caused by the sedentary nature of the employment itself. It has long been known that stone-masons who are engaged in cutting stones suffer from inhalation of the silicious particles, and become affected with pulmonary disease, and also that the grinders employed in manufacturing cutlery suffer in a similar way, especially when the processes are carried on in confined workshops, and without the aid of water, which prevents the diffusion of the silicious and metallic particles in the atmosphere. Under the head of metal manufactures, Dr. Greenhow has given some statistics which prove very clearly the injurious influence of such employments, and in respect to the operatives of Sheffield and Birmingham, it is made apparent by the great divergence of the pulmonary death rates in the male and female population. The men being almost exclusively engaged in such employments suffer most, and in Sheffield we find that the male pulmonary death rate is 839, whilst the female is only 670; and in Birmingham the male rate 838 and the female 699. The coarser kinds of metal manufacture, such as iron founding and nail making, seem to be much less injurious.

It has been found that the linen and flax manufacture produces an injurious effect on the operatives, by causing them to inhale an atmosphere charged with dust. I have myself observed the tendency of dust to cause consumption in the corn-porters and warehousemen of Liverpool, whose employments are of a dusty nature. It can

be shown, by a comparison of the male and female pulmonary death rates of Hendon, an agricultural district between London and Harrow, where the men are chiefly employed in binding and cutting hay for the London market, that the inhalation of the dusty particles must have a pernicious influence on the lungs; for whilst in most of the purely agricultural districts the female is at least as high as the male death rate, in Hendon we find that the male exceeds the female rate in the proportion of 434 to 372.

Mining.—Lead mining is a kind of employment which appears to have a very distinct and decided effect in the production of pulmonary disease. Tin and copper mining produce a similar though less pernicious influence. The injurious effects of these employments falls chiefly or almost exclusively on the men, so that a comparison of the male and female death rates of some of the districts gives us an accurate mode of estimating their respective influences. In all the lead mining districts the male death rate from pulmonary diseases greatly exceeds the female, and in Alston, which is the most exclusively lead mining district in the kingdom, the male death rate is 877, whilst the female is 494. The injurious effect of the occupation of the men is such that a larger annual proportion of the grown-up men die of diseases of the chest than in the most unhealthy towns in the kingdom, and, in consequence, Alston has been found to be the place in which there is a larger proportion of widows than in any other in the kingdom.

The injurious effect of copper mining is shown in the fact of the male pulmonary death rate of Redruth being 670, whilst the female is 450; and the injurious influence of tin mining in the male rate of Penzance being 560, whilst the female rate is 456. It would appear that, whilst lead, copper, and tin mining are certainly dangerous to health, coal mining is at least not unhealthy;

so that we have reason to suppose that there must be metallic particles inhaled during the working of the ores, which injure the lungs.

Soldier's Life in Barracks. — There is no occupation which can be shown to have so direct and powerful an influence in producing consumption as the life of a soldier. Though they are men picked out as the soundest and healthiest, it has been found that the mortality among soldiers is extremely high, being in the infantry of the line 18·7 per 1000 from all causes, or double that of the general population of the whole country, which is only 9·2. This applies to the army at home, and does not include the officers, who are not affected in a corresponding ratio. In the foot-guards the mortality is even higher, being 20·4 per 1000. Not only, however, do we find that the mortality among soldiers is far greater than in any other class of the community, but we also discover, on further examination, that there is scarcely any fact in reference to pulmonary diseases more striking, more important, or more clearly proved than this, that the excessive mortality is caused more by the development of pulmonary than of any other class of diseases. The form of disease to which an impulse is thus given is almost entirely chronic, and of tubercular nature. Dr. Farr has pointed out, with the aid of a diagram, that, whilst in the male population of England of the soldier's age, only 4·5 die of chest and tubercular diseases, in the infantry of the line there are no fewer than 10·1. The deaths in the general population from all diseases being only 9·8, we see, therefore, that in the army a greater number perish from pulmonary diseases alone. In the guards the proportion is even higher, being 12·5 from consumption and allied chronic affections, exclusive of the acute.

The facts and statistics brought to light by the commissioners have further proved that the higher the mor-

tality of each particular branch of the service, the greater is the proportion of pulmonary disease; and also, that the ratio of deaths from consumption to the deaths from other pulmonary diseases, increases in proportion as this class of diseases is more prevalent; so that if it were wished to make a great experiment to discover the causes of consumption by its actual production, it would be difficult to devise a more complete one than has been made, by the neglect of the health of soldiers in barracks. For it is not in the field that the great mortality from pulmonary disease occurs, but while the soldier is at home; and it is, therefore, in his mode of life here that we must look for a solution of the causes of his great liability to consumption.

The soldier's life in barracks is monotonous, and he is under restraint, to which circumstance we may attribute some influence; but in these respects he is not materially different from the sailor in the navy on the home station, in whom the mortality is only at the rate of 6·8 per 1000, or considerably less than that of the general population. Neither can night duty, which has been assigned as one of the causes, have any great effect, for the mortality in the police force, who have a larger amount of night duty, does not exceed that of the population of the country. The intemperate and debauched habits of soldiers undoubtedly have a very considerable influence; but we must look beyond all these, and there is reason to believe that want of proper exercise and suitable employment are quite as efficient causes, but that crowding and insufficient ventilation of the barracks and defective sewerage are the most important.

The mortality is least in the cavalry and dragoon guards, who have varied exercise in the stable, as well as the sword-exercise, which calls into action the muscles of the chest in a manner unknown to the foot-soldier, whose attitudes are monotonous and restrained, so that when

on duty and drill, he is often loaded with knapsack and other accoutrements, which constrain and hinder the free action of the muscles of the chest, and seem to act injuriously on the respiratory organs. The Commissioners appear, however, to think, that of all the causes the most important in the production of the excessive amount of consumption in the army has been the confined, ill-ventilated condition of the barracks. They seem to think that the breathing of the unwholesome air of the crowded dormitories has laid the seeds of consumption, the minimum cubic space allowed to each soldier having been only 450 cubic feet. We have reason, therefore, from this and other facts, to believe that when impure air is habitually respired, it acts like a blight upon the lungs.

Some influence may also be attributed to the monotonous and unvaried nature of the soldier's diet, and to the meat having been always cooked by boiling.

It is sad to think that such an amount of disease and mortality should in time past have been allowed to occur amongst our soldiers from neglect of ordinary sanitary laws; but as the attention of the country has been fully roused by the facts published in the Report of the Army Commissioners, we may now hope that what was done towards the end of last century for our sailors, who had been decimated by scurvy, fever, and dysentery, by sanitary improvements in respect to diet, the use of lemon-juice, ventilation, cleanliness, and the preservation of the water in iron tanks,—measures by which these diseases were almost extinguished, and the mortality reduced below the level of that of the general population,—will be shortly effected for our soldiers by the introduction of such changes as may reduce the disgraceful pulmonary mortality to a level with that of the general population of the country.

Confinement.—It is a well-known fact, that many of the lower animals, when confined in menageries and deprived

of proper exercise, light, and fresh air, become subject to consumption, and frequently die of tubercular disease. Dr. Baly has demonstrated that the same influences operate on man, and that in prisons, though the food, ventilation, and other hygienic conditions are unexceptionable, the proportion of scrofula and consumption in criminals is remarkably increased, and that the rate of mortality from these diseases augments with the extension of the period of confinement. In the Millbank Prison, he has shown that the mortality is double that of the metropolis, and that the deaths from consumption are three times as numerous. We have seen that soldiers suffer from the constrained life they lead in barracks, and there can be no doubt that various other constrained modes of living, as, for example, in workhouses, have a similar effect. I have seen the same injurious effect exemplified in the development of consumption in pupils subjected to the confinement and restraint practised in some boarding-schools. A constrained, monotonous mode of life, is unquestionably a fertile cause of consumption, and especially when to this is added privation of the stimuli of exercise, light, and fresh air; and their influence is aggravated by insufficient or unwholesome diet, and exposure to damp and cold.

Mental Influences.—The mind and the imagination have a wonderful action on the body, but it is extremely difficult to appreciate accurately their effects on diseases. I believe that the depressing mental emotions and affections have a directly sedative effect on the lungs, and as certainly reduce the intensity of the respiratory function, as exercise and muscular action increase it; and whilst I think that cheerful mental occupation and a hopeful condition of mind have both a prophylactic and curative tendency, which it is most important not to overlook in treating the disease, I feel convinced, from my own observation, as well as from some of the facts already adduced, more especially those in reference to criminals, that the de-

pressing mental influences, such as grief, disappointment, anxiety, and the loss of fortune, and especially of friends, have an influence greatly beyond what is commonly attributed to them. I have never seen anything that would lead me to believe that consumption is at all a contagious disease, though I think it is injurious for a healthy person to sleep with one who has active pulmonary disease; but we not unfrequently find a husband, and more frequently a wife, attacked soon after nursing the other. In all such cases where I have seen one relative attacked after another, I have attributed it to mental depression, and the trial of the feelings which must necessarily be experienced in watching, often for months, the fatal progress of this wasting and distressing disease in a near relative. In the case of a brother or a sister, we have also to take into account that these influences act with double force in a constitution hereditarily predisposed.

Defective Diet, insufficient Clothing, Cold and Damp.— These are well-known causes, the influence of which has never been underrated. It is difficult, however, to bring forward facts proving clearly the operation of these causes separately, as they generally act in combination with each other, or with some of those already mentioned. I look, however, on these as minor causes, and I may state that whilst soldiers in barracks are more subject than any other class of persons to consumption, this is not the disease from which they suffer in the field, where they are exposed to all these causes. The Crimean experience proved this, and showed that exposure to cold, wet, fatigue, and insufficient food, caused the development of scurvy and the zymotic class of diseases, fever, cholera, and dysentery, but not consumption. It is also known that the extreme cold of very northern latitudes does not render consumption a more prevalent disease, but has the opposite tendency. This class of causes acts powerfully, however, in conjunction with others.

Intemperance and Irregularities of Living.— Though consumption is not the disease to which the habitual drunkard is most liable, those of the nervous system and of the digestive organs being more common in intemperate persons, yet I have so frequently seen tubercular disease of the lungs in persons of dissolute habits, that I believe it has a powerful influence in conjunction with other causes and irregularities of living in producing this disease.

On this subject a writer, from whom I have already quoted, observes very justly, that " of all vices, none are so apt to lead on to consumption as the unnatural or unrestrained indulgence of the sensual passions. To this cause, indeed, the germ of tubercles are very frequently traceable; and I am convinced that the many bearings of this subject upon the physical and mental energies have a much closer and more frequent relationship to phthisical affections than we can ever expect, from their peculiar nature, to see fully demonstrated. It is probably in this way that so much evil appears in the sequel to marriage contracted at too early an age either for the due estimation of its responsibilities, or the perfecting of the constitution, the penalty for the violation of such a natural law being enacted in the subsequent establishment of phthisis in the parent or in the offspring, or perhaps even in both."

Effect of other Diseases.—Tubercular deposits are most apt to be formed in the lungs during debilitated states of the constitution, and we know from experience that consumption is not unfrequently developed during convalescence from fevers and other diseases. Scarlet fever and measles are especially liable to stir up the tendency to the disease in children of delicate constitution; and therefore, in such cases, the greatest care should be taken to remove completely the attacks of bronchitis and inflammation of the lungs, which are so frequently induced by these

diseases, and to restore the health by suitable tonic treatment, and those means best adapted to prevent the tubercular tendency.

Influenza, bronchitis, pneumonia, and chronic pleurisy have also, I believe, in many cases a direct influence in exciting the deposit of tubercular matter in the lungs. Their influence is most frequently observed in those predisposed hereditarily, or by the action of the causes which have been already mentioned; and I believe that it has been rather underrated by many medical men, who have appeared to think that these diseases act merely by exciting into activity pre-existing or latent tubercles, or are themselves produced by the irritation of the tubercular deposit. In a practical point of view we must not, however, overlook the fact, that tubercle is nearly allied to the lymph effused by healthy inflammatory action; and though ordinary tubercle is usually deposited independent of inflammation, we know that the products of chronic pneumonia are so nearly allied to tubercle, that they often run precisely the same course; and I believe that when the blood is in a fit condition to cause tubercular deposition, inflammatory irritation will readily determine it in the part so affected.

CHAP. III.

SYMPTOMS AND PHYSICAL SIGNS OF CONSUMPTION.

INSIDIOUS ONSET OF THE DISEASE. — FAILURE OF GENERAL HEALTH AND STRENGTH. — DESCRIPTION OF STAGES. — COUGH. — EXPECTORATION. — DYSPNŒA. — PAIN IN THE CHEST. — HÆMOPTYSIS. — LOSS OF FLESH AND WEIGHT. — HECTIC FEVER. — PERSPIRATIONS. — DISORDER OF DIGESTIVE ORGANS. — VOMITING. — DIARRHŒA. — COMPLICATIONS. — BRONCHITIS. — PNEUMONIA. — PLEURISY. — PNEUMOTHORAX. — CASES. — PHYSICAL SIGNS. — KIND OF INFORMATION DERIVED FROM PHYSICAL EXAMINATION OF THE CHEST. — SIGNS IN THE FIRST STAGE. — IN THE SECOND. — IN THE THIRD. — RETROGRESSIVE SIGNS. — CASE.

THERE is scarcely any disease which commences in a more insidious manner than the ordinary form of consumption. The earliest symptoms consist usually of weakness and failure of the general health, and the cough or other local symptoms are often so trifling as to attract no notice at first. The disease is, therefore, frequently permitted to advance very far, and to produce very decided disorganisation of the lungs before the case is looked upon in a serious point of view, or brought under the observation of the physician. I have observed this in the case of medical men themselves, and in members of their families, where we should expect that the earliest symptoms would be attended to. This insidious character of the disease is a circumstance much to be regretted, as we find that in proportion as the constitutional powers are undermined, and the substance of the lungs disorganised, our chances of being able to arrest the progress of the disease are diminished.

In describing the symptoms, I shall confine myself to a brief outline of them, in the order in which they are

commonly observed, and endeavour to point out the respective value of each in enabling us to ascertain the existence and stage of the disease.

Cough is one of the earliest symptoms of consumption, and though frequently attributed by the patient or the friends to cold, it will usually be found, on more minute inquiry, to have come on slowly and almost imperceptibly, without appreciable cause. It is at first so slight that it attracts but little notice, occurring chiefly in the morning, or being induced by any unusual exertion or excitement. It is a dry cough at the commencement, but by degrees a small quantity of transparent mucus is brought up in the morning. Some oppression at the chest is often experienced; pain may also be brought on by active exercise, and the breathing is easily hurried. The complexion becomes pale or faded, but is occasionally flushed at certain periods of the day, and there is almost always more or less languor and disinclination for active bodily or mental exertion. These symptoms and their gradual increase warn the patient or his or her friends that the general health is seriously deranged, and that there is something more than a common cold in the chest. The patient not only loses strength, but also becomes thinner, and his features acquire a sharper appearance, whilst the muscles no longer retain the firmness and tone of health. There is often a feeling of chilliness, especially in the afternoon or evening, and it is succeeded by flushing of the cheeks, and a dry and burning state of the palms of the hands and soles of the feet. During the night there is often a feverish condition, which, together with the cough, may interfere seriously with sound repose; and when, towards morning, the patient falls into a sound sleep, perspiration usually breaks out more or less profusely. Along with these symptoms there is usually more or less derangement of the digestive functions, and loss of appetite. In females there is often irregularity of

the catamenia at an early period of the disease, and menstruation in most cases ceases as it advances. The second stage is characterised chiefly by an increase and change in the expectoration, which gradually loses the clear transparent appearance it had at the commencement, and becomes mixed with opaque yellow matter, until it acquires a decidedly purulent character. Streaks or spots of blood, if they have not been previously observed, are now more frequently seen. The fever, loss of flesh and appetite, and languor and debility increase more rapidly in this stage, where means are not employed or fail to arrest the progress of the disease. The pulse is almost always more or less increased in rapidity in this as well as the first stage, and we may regard its rise towards 100 or above this point as an indication of activity in the disease. The abundance of purulent expectoration during this period arises from the tubercular abscesses opening into the air tubes, and it consists of greyish yellow purulent sputa, which are rounded; and some sink in water, while others float at various depths. In the third stage the severity of the symptoms continues to increase, but the expectoration sometimes diminishes, and the sputa form flat patches without air bubbles. The bowels are sometimes in a costive or natural condition throughout the course of the disease, but more frequently diarrhœa comes on even at an early period. In the last stage diarrhœa, extreme weakness, profuse perspirations, and the frequent teasing efforts of coughing, to dislodge the purulent secretion from the lungs, are the most distressing of the symptoms, and together with occasional swelling of the ankles and an aphthous state of the mouth, they mark the advance of the disease.

There are a few points, in reference to the most important of these symptoms, which require further notice in their bearing upon diagnosis. The symptoms furnished directly by the condition of the lungs themselves in

phthisis are, cough, expectoration of different kinds of sputa, shortness of breath, pain, and hæmoptysis or spitting of blood.

Cough is a symptom which may arise from almost any disease of the lungs, and even from derangement in the function of some distant organ. It is one of the most constant symptoms of consumption; we can scarcely conceive its absence, in any case, during the whole course of its progress; and it is, as we have already seen, at first dry, and irritating or hacking; but becomes loose, and accompanied with purulent expectoration, in the second and third stages. The presence of cough alone does not, however, teach us much, as its value, as a symptom, is entirely dependent upon its combination with others. But when we find it coming on without evident cause, and accompanied with some loss of flesh and strength, we should look upon such a cough, if persistent, with great suspicion, especially if the patient has any chills during the day, or tendency to morning perspiration, and we should not omit to make a physical examination of the chest when such a combination is met with.

There is great variety in the amount and severity of the cough in different cases. In some it is a very trifling symptom, causing but little inconvenience, whilst in others of more excitable temperament, it comes on in severe, almost convulsive paroxysms, shaking the whole frame, and even causing the food to be rejected from the stomach by its violence. The character and severity of the cough have an intimate relation to the degree of nervous irritability of the individual, the amount of bronchitis which occurs as a complication, and the condition and quantity of the secretions furnished from the mucous membrane and tissue of the lungs, and these are points requiring to be closely observed in the treatment of this important symptom.

Expectoration is at first either absent or scanty, con-

sisting of stringy saliva; and when in the advanced stages it presents some characteristic appearances, the other symptoms have usually cleared away all doubt as to the true nature of the case. There are two sources from which the expectorated matter in consumption is derived—the mucous surface of the air tubes and air cells, and the abscesses and cavities of the lungs. It must, therefore, consist of variable proportions of mucus and pus from the bronchial tubes, and of purulent and tubercular matter from the abscesses and cavities. When it consists chiefly of a clear transparent fluid like white of egg, it proceeds from the mucous membrane, and the more frothy it is the more minute are the air vessels from which the secretion has been thrown off. On the other hand, the rounded yellowish sputa, which are seen floating in this mixed salivary and mucous fluid, proceed generally from cavities, and consist chiefly of pus, with which some specks of greyish yellow tubercular matter are occasionally intermixed. The quantity and character of that portion of the expectoration which comes from the mucous membrane may often be diminished and changed in the course of a few days by suitable treatment, but we never observe the same rapid changes in the quantity or appearance of the sputa which come from cavities, and a decided diminution in the quantity of the latter almost always coincides with an improvement of the general health.

Dyspnœa, or shortness of breath, is another symptom, which may be produced in a much greater degree than it usually occurs in consumption, by other diseases—such as bronchitis, asthma, and disease of the heart; and we find it also in chlorosis, which is merely a functional disorder with an altered state of the blood. The value, then, of dyspnœa can be judged of only by combining it with other symptoms; but, as it is rarely absent altogether, the amount of it affords some information as to

the extent of injury the lungs may have sustained. It is a symptom which must always exist to a greater or less extent where there is much disorganisation of the lungs; but it is not found to be generally present in proportion to this; and I believe that where it is a prominent symptom, it is chiefly due to bronchitis, pneumonia, or plurisy occurring as complications. In cases where dyspnœa has arisen from these complications, we sometimes find a rapid improvement take place in the breathing power under proper treatment; but when it has arisen entirely from tubercular disorganisation, it is a more permanent symptom, always experienced on exertion; and when we succeed in arresting the disease, in such cases a tardy improvement, even to a limited extent, must be regarded as a favourable indication.

Pain in the chest, though often present during the second and third stages, may be absent during the first, and even during the whole course of the disease. It is most frequently perceived in one side only, in the shoulder, or beneath one of the clavicles, and is slight, recurring from time to time. Pain is, however, a variable and not an essential symptom of consumption, and I believe that it seldom arises from the irritation of the tubercle itself, but from slight pleuritic attacks. The pains thus occurring in the chest, in cases of phthisis, are liable to be confounded with other kinds of pain. That which is experienced in bronchitis is distinguished by its being rather a feeling of soreness at the centre of the chest. There are also pains in the muscles of the chest arising from rheumatism, and others from dyspeptic disorders; and in hysterical and nervous females, we not unfrequently meet with pains in various parts of the chest, in conjunction with such derangements of the general health as often cause much anxiety on the part of patients and their friends. It seldom happens, however, that after a careful investigation of the physical signs and of the other

symptoms, we have much difficulty in separating such cases from those in which the pain proceeds from tubercular affection of the lungs.

The symptoms we have noticed derive their value and signification entirely from their combination with other symptoms, and with physical signs. It is otherwise, however, with *hæmoptysis*, which is alone a more certain symptom of the presence of tubercles in the lungs than any other. It derives its importance from several circumstances. It occurs at some period of the disease in two-thirds of all cases. Louis found it in this proportion in his; and in those at the Hospital for Consumption it had been present in 63 per cent. It occurs, too, most frequently, not in the advanced stages, as we might have expected, but in the proportion of three cases in the first to one in the advanced; and it may, therefore, serve to warn the patient of his danger while there is yet time to use the proper means. Andral has stated, that only a fifth of those who spit blood are free from tubercles; and if we also separate those cases where it has arisen from an injury, those in which it has been produced by disease of the heart, and those in females where it has been caused by suppressed menstruation, we may take it as the most certain symptom, and as indicating, with the highest degree of probability, the presence of tubercular disease.

It was formerly believed, in consequence of hæmoptysis being observed to be often followed by other symptoms of consumption, that it was one of the causes of the disease. I doubt, however, if it ever has the effect of producing it, though it often gives an impulse to the progress of consumption, and I always take it as evidence of the actual existence of some deposit. Many cases have come under my observation of persons, who, having spat a little blood, have been more careful of their health

in consequence, and though belonging to consumptive families, have escaped from having the disease developed in themselves. Tubercles consist of friable imperfectly organised matter, everywhere in close proximity to the mucous lining membrane of the lung, which may, therefore, be readily ruptured by one or more of these little hard bodies pressing upon it; and we can conceive that in this way a single one, or a very limited number, may produce a slight attack of spitting of blood; and if the individual attend immediately to his health, and avoid the causes of the disease before any serious local mischief has been done, the tubercles may undergo partial absorption or cretaceous change, and no more be deposited, and thus the disease be permanently arrested, if not cured.

Spitting of blood is a symptom which always causes alarm, and when it occurs in individuals so placed, and who would disregard any other symptom of impaired health, and continue to neglect it, the warning it affords may be looked upon as rather a fortunate circumstance. I may illustrate this by referring to two cases which have very recently come under my observation, where the patients believed themselves perfectly well until this symptom appeared. One was a young gentleman sixteen years of age, who had been placed in an office where the hours were rather long. Though he had not been very strong as a boy he had a stout muscular appearance, and the only symptom of pulmonary affection he had shown was his having coughed some mouthfuls of blood a few days before I was consulted. There were no physical signs to indicate the place from which the blood had come. I recommended that he should be taken from the office and have some more active out-door occupation, and I approved of his father's suggestion that he should first take an Australian voyage. The other was the case of a middle-aged clergyman, of a consumptive family, who

brought up some blood by coughing soon after unusual exertion in preaching. He was naturally pale but a man of much energy and muscular power, and in his ordinary health without any other symptom of pulmonary disease. There was, however, beneath one of the clavicles a deficiency of expansive development, and it appeared doubtful if there was a perfectly equal amount of resonance on percussion on both sides. It therefore seemed that any tubercle deposited was in its earliest stage, and had not as yet reacted on the general health; and, in both of these cases, we have good reason to hope that, by change of habits and by treatment hygienic as well as medicinal, the further development of disease may be averted.

The quantity of blood brought up is very variable. Sometimes it consists of a small quantity of florid blood, a few teaspoonfuls, or the ordinary expectoration becomes of a red colour from intermixture with blood. There are other cases, however,—those in which a large vessel has been eroded or ruptured,—where the quantity brought up is very large, several pints being sometimes brought up in a very short time, and threatening to suffocate the patient. In these cases there is great prostration of strength and faintness, and immediate danger; but it is surprising how often the hæmorrhage ceases by means of perfect rest, and the employment of cooling astringent and sedative treatment.

Of the general symptoms which commonly occur during the course of the ordinary form of consumption the most important are loss of flesh and diminution of weight, hectic fever and perspirations, and diarrhœa.

There is no symptom more constant in its occurrence, and therefore none more characteristic of phthisis, than a *wasting* of the fat and the muscular tissue of the body, and this coincides with a loss of weight which always takes place when the disease is in an active progressive state. Patients are almost always conscious of this them-

selves, and where we do not detect it from their general aspect we may still discover it by grasping the muscles of the arm which will be found to have lost their healthy tone and firmness. There is, however, not only wasting of the solids of the body, but also of the blood likewise, which becomes thinner from a diminution of the red globules, and hence the paleness of the complexion. On the other hand, when the disease is arrested by treatment, the patient not only ceases to lose weight, but he often gains flesh and weight in a surprising manner, and there is no more certain indication of a favourable change than that furnished by an improvement in the weight.

Hectic fever scarcely occurs at all in some of the most chronic cases of the disease, but in others, and especially in the advanced stages, there are distinct chills succeeded by heat of the hands and feet, or of the whole surface, and flushing of the cheeks: there is thirst, and the pulse runs up often to 120 or 140. Where there is hectic fever the night perspirations, which constitute one of the most common and characteristic of the symptoms of consumption, are seldom absent. Where the fever runs high we sometimes find, too, that they come on during the day if the patient happens to fall asleep. They are sometimes partial, breaking out on the head and chest only, but when profuse they are most depressing and weakening.

As a general rule, it may be stated that an improvement in these symptoms often affords as early and quite as certain a test of a retrograde tendency in the disease as is furnished by an amelioration in those referable to the lungs themselves, such for example as the severity of the cough. With a pulse below 80, and absence of fever and perspiration, we rarely find an active or progressive tendency in the disease; and if we also find that the patient has not only ceased to lose flesh, but has actually begun to gain in weight, we obtain the best proof that a favour-

able change has taken place, and that the disease is being arrested. Such signs of improvement not only often precede any decided amelioration in the local symptoms, but they are also almost invariably observed before there is any well marked improvement in the physical or stethoscopic signs.

The *digestive organs* are almost invariably more or less out of order in cases of consumption. The secretions are deranged, more especially that of the liver, and the appetite and digestive power impaired. Vomiting is the extreme form of disorder arising from this cause which attends the early stage, and diarrhœa that which is most characteristic of the latter stages. These symptoms are, however, often found to go together, but I have met with very obstinate vomiting even before the disease of the lungs was well developed. In another work * I have stated that I do not agree with those who ascribe the vomiting of phthisis to sympathy between the stomach and lungs, but that I regard the gastric disorder as a primary derangement, and the vomiting as much the independent effect of the tubercular diathesis acting on the stomach as the ulcers and deposits of tubercle in the follicles of the intestines are the independent effect of the tubercular diathesis. Though vomiting is not a common symptom in ordinary cases of the disease, I have met with it in all stages, and have found it a most distressing one. I attended a lady who had it in a most severe form at intervals during more than a year previous to the active development of the tubercular affection of the lungs. Very little relief was afforded by any of the usual remedies prescribed either by myself or by some of the most eminent men who were consulted in her case. After a time, however, the tubercular deposit in the lungs which had shown a tendency alternately to advance and recede,

* A Practical Treatise on Disorders of the Stomach, &c.

began to soften, and then the sickness and vomiting abated decidedly, and never afterwards gave her any trouble. There are other cases in which it occurs in conjunction with diarrhœa, and I have seen several most obstinate ones, where it arose from the complication of slight renal affection, indicated by a trifling amount of albumen in the urine.

Diarrhœa is a symptom which occurs chiefly in the advanced stages, and it is an unfavourable sign when we find a tendency to it at an early period of the disease. I believe that the tuberculous diathesis has a direct effect in causing relaxation and weakness of the mucous surfaces; and hence the frequent occurrence of leucorrhœa, as well as of the diarrhœa which often comes on before there has been any tubercular deposit in the mucous follicles of the bowels.

I have said that diarrhœa is an unfavourable symptom when it occurs early in the disease, but I have seen consumption arrested in several cases where it had come on; and in a subsequent chapter I shall refer to a most obstinate case in a young lady who had a cavity in one lung and other very severe symptoms, and yet by means of persevering treatment the diarrhœa was not only completely stopped, but the tubercular affection of the lung perfectly arrested, and vigorous health recovered.

In females the uterine functions generally become more or less deranged, and it is very common, especially in young persons, to find menstruation become gradually scanty, and to occur at longer intervals till it ceases altogether. Such irregularity has sometimes been regarded as a cause of consumption; but I believe that it is far more frequently the effect; and where we succeed in arresting consumption and restoring a good state of health, we not unfrequently find that the uterus resumes its functions. This must always be regarded as a very favourable sign.

Complications.—Bronchitis is the most common of the inflammatory affections which occur as complications in cases of tubercular disease of the lungs. There is always more or less of it in the immediate neighbourhood of those portions of the lungs which are the seat of the deposit, and any of the causes of common catarrh may lead to its extension more generally throughout the lungs. The amount of cough, the oppression at the chest, and the character of the expectoration are almost as much influenced by this complication as by the primary tubercular disease itself. All these symptoms are aggravated by it, and an amount of febrile disturbance induced which is proportioned to the extent and acuteness of the bronchial complication. It produces also a most injurious effect upon the tubercular disease by the congestion it causes in the part affected, and by the tendency it thus has to induce further deposition as well as softening; and it is therefore of the utmost importance, on this account as well as in order to obviate its injurious action on the general health and strength of the patient, that bronchial complication should be guarded against and removed by suitable treatment as speedily as possible.

Inflammation of the substance of the lung is another complication which is less common but even more injurious than bronchitis. Though it causes more active febrile disturbance than the bronchial complication, the symptoms are less acute than in ordinary pneumonia. It produces a most injurious effect upon the lungs by causing an extension of the tubercular deposition in the parts which become consolidated.

Pleurisy is an extremely common form of inflammatory complication, which is perhaps never altogether absent during the whole course of any severe case. In many cases it is very slight and limited in its extent, causing only a slight pain in the side or shoulder, or beneath one of the clavicles, accompanied with slight fever, and occa-

sionally some creaking or rubbing sound. It is the chief cause of the pains in the chest which are so commonly experienced by consumptive patients, and it appears generally in the form of dry pleurisy, which causes the adhesions so frequently seen after death. It sometimes, however, produces copious serous effusion in the pleural cavity which comprises the lung, and always produces much embarrassment of the breathing, and often, also, much constitutional disturbance.

I have seen several cases in which pneumothorax has been produced by a tubercular ulcer perforating the pleura and permitting the air to enter the cavity of the chest. The rupture of the pleura in these cases is most apt to occur during a severe fit of coughing, and the patient is suddenly seized with a most acute pain in the side, and extreme difficulty of breathing, and faintness; and in those cases where the patient survives this accident, these symptoms are followed by acute pleurisy and effusion. The chance of the patient surviving must depend to a great degree on the condition of the opposite lung; and where it is free from active disease, and the immediate effects of the accident are recovered from, he may live for an indefinite period in a state which is popularly believed to be much more common than it really is,—with only one lung acting. In the case of a lady about thirty years of age, respecting whom I was consulted three weeks after the occurrence of the symptoms which indicated perforation, the expectoration had almost entirely ceased from the time of the perforation. The perforation was on the right side, and indicated by all the usual physical signs,—amphoric respiration and voice, dulness at the lower, and tympanitic clearness on percussion at the upper part of the chest, and these, which were the only means by which the true nature of the case could be discovered, showed that the pleural cavity was filled with nearly equal proportions of air and fluid. The patient in

this case survived about a month from the time of the perforation. When the immediate effects are recovered from, the patients often live for many months; and I have been several times consulted in the case of a young gentleman about twenty years of age, in whom perforation occurred, nearly two years ago. He was reduced to an extremely low point, but a gradual improvement began to take place in his strength and other symptoms, and there is reason to believe that absorption and reparation have taken place to a great extent, for the shortness of breath has greatly diminished, and he can go about and take exercise quite as well, and even much better, than a large proportion of pulmonary invalids, and has increased greatly in weight.

Physical Signs. — It would be foreign to our present inquiries to describe at length each of the physical signs of phthisis, and their mode of combination and succession; and, as full information on this subject, which is essentially a practical one to be learned only at the bedside, may be obtained in many elementary works *, I shall confine myself here to a brief outline of the subject with reference chiefly to the signs of the first stage, and those of retrogression.

Physical examination of the chest by stethoscopic and other means, gives us a kind of positive information as to the nature, the extent, and the stage of pulmonary diseases, such as has scarcely been attained in reference to any other class of internal diseases, and which could never have been derived from observation of symptoms only. This method of examination should never therefore be neglected, in any case where there is reason for suspecting incipient pulmonary disease; but at the same time the symptoms should be duly estimated along with

* A Tabular View of the Physical Signs and Diagnosis of the Diseases of the Lungs. By the Author.

the physical signs in forming an opinion. We know, too, that in some instances, symptoms furnish earlier indications than physical signs, and this occurs especially in those cases where a limited number of small tubercles are deposited so as to be separated by healthy pulmonary tissue, and therefore give no definite signs on physical examination, though cough and failure of the general health, or even spitting of blood, may indicate the extreme probability of their presence. The information which physical examination gives us in early and doubtful cases, is still, however, often very valuable, even when it is of a negative nature; for, if some suspicious symptoms of tubercular disease be present, it enables us to affirm that the deposit has either not yet taken place, or that, if present, it can only be to a limited extent, and that it must therefore be in its earliest stage when means may be used with the best chance of preventing its development.

The discovery of tubercular disease by physical examination is based upon the fact, that tubercles are almost invariably first deposited at the upper part of the lungs; and that other diseases, unless consequent upon this, rarely reach the summit of the lungs. A slight depression at the upper part of one side of the chest is sometimes an early sign of tubercular deposit, and it is usually combined with some deficiency in the expansion of the part on full inspiration; but it is seldom a well-marked sign, except when there is considerable or pretty far advanced disease. Dulness on percussion over one clavicle, or a portion of it, or above or below it, is observed in a degree proportioned to the extent of the disease, and the amount of consolidation arising from it; and if it is well marked on one side, and if the other portions of the same lung are healthy, and there is no emphysema on the other side, we may regard it as one of the surest indications of tubercular disease, especially if it corresponds with some

alteration of the respiratory murmur. The chief alterations in this are feebleness, harshness, bronchial character, jerking respiration, and prolonged expiration.

Another variety of signs is derived from the sound of the voice and the cough, as they are heard through the stethoscope; and increased loudness of either, or both, generally coincides with dulness, and indicates, when heard at the upper part of the chest, the presence of tubercular disease, especially when we find that the respiration also is altered there.

These signs occur in the *first stage*, before the tubercular deposit has softened.

There is another variety of signs which occur in the subsequent stages as well as the first, and are dependent on the presence of fluid, or secretion in the air tubes and tissue of the lung, around the tubercles. The sonorous, sibilant, and crepitating rales arising from this cause are not produced so much directly by the tubercles themselves, as by the inflammation of the air-tubes and tissue of the lungs, which they excite around them. Simple bronchitis, or pneumonia, affect the lower parts of the lungs, and almost never attack the summits first, except when tubercles are deposited there; and therefore, the occurrence of sonorous and sibilant, or crepitating rales towards the summit of one lung, while they are absent at the lower part posteriorly, indicates, with a great degree of certainty, the existence of tubercles. I always look upon cases where the signs of bronchitis are thus confined to the summit of one lung with great suspicion. The creaking and crumpling sounds which are, I believe, often produced on the pleural surface, and the dry crackling rale, are less important signs, as they are only occasionally heard.

The passage from the first to the *second stage* is sometimes indicated by a few clicking sounds. They are the commencement of the humid subcrepitant rale, which is very characteristic of the second stage, and arises from

the air passing through the muco-purulent secretion in the minute bronchial tubes and small cavities.

With the advance of the disease into the *third stage*, we find that there is increased dulness and depression in the affected situation. The subcrepitant rale becomes large mucous bubbling, and the usual signs of a cavity are developed—cavernous respiration, voice, and cough.

Retrogressive Signs.—When consumption is arrested, the physical signs undergo changes corresponding with those which occur in the seat of the disease. We know that tubercle may be partially, if not completely, absorbed, that it may be changed into cretaceous matter, and that it may be eliminated, leaving a fistulous cavity, and in rare cases a cicatrix only. With these facts in the mind, and recollecting also that tubercles lead to the complications of congestion, bronchitis, and pneumonic consolidation, especially in their immediate vicinity, we would point out that the signs of retrogression must vary in different cases, according to the amount of disease, the stage, and complications, as well as the completeness of the retrogressive or curative action.

In the early stage, where there has been only slight dulness, with feeble or harsh respiration, and interrupted inspiration or prolonged expiration, indicating an early stage and limited amount of disease, the respiration and sound on percussion may become so perfectly natural after the disease has been arrested for several months, that none of these signs can be discovered on comparing the two sides of the chest.

In other cases, where similar signs are combined with sibilant or sonorous rales indicating local bronchitic complication in the part affected, a perfectly natural condition may likewise be restored.

Where the disease has advanced into the second stage, and there is considerable dulness with subcrepitant rales, we sometimes find that the crepitation becomes of a dryer

character, less abundant, and it may finally disappear altogether, the respiration remaining more or less harsh, or even bronchial in character. The dulness may also diminish partly by absorption, as well as removal of congestion, but perfectly natural resonance on percussion can scarcely ever return where there has been well-marked dulness from tubercular deposition. This is only what we should expect, when we consider that tubercle cannot be eliminated by softening, and could scarcely even be absorbed completely, without causing obliteration of some of the air-cells. The sound of the voice and the cough generally continues louder, or otherwise changed, in the part affected.

There is no surer indication of the retrogression of the disease than that afforded in the second and third stages by the disappearance of subcrepitant rales, and the dry character which the respiration at the same time acquires. The subcrepitant rale often continues to be heard after it has disappeared from ordinary respiration, by causing the patient to take a deep inspiration immediately after coughing. In several cases of arrested phthisis, I have also found that, by the same means, a peculiar fine dry crepitation has been produced, and this I have found a very persistent sign, the cause of which I do not quite understand. I have also found in cases where a considerable amount of tubercle had softened, and cavities had formed, that deep-seated, dry, creaking sounds were audible when the patient took a full breath. They are like pleural friction sound, but seem to be in the substance of the lung, and I have thought that they are caused by one side of a cavity rubbing on the opposite side. In such cases there is often some sinking of the walls of the chest.

I have seen very decided dulness on percussion, with flattening of the walls of the chest, amphoric respiration, and pectoriloquous voice, with some dry creaking sounds,

in a case where, from its history, these signs of a cavity must have been present for many years, and might be regarded as evidence of its having become lined with fibro-cartilaginous membrane.

In a *case* where there was almost complete dulness at the apex of one lung, in front as well as behind, with the signs of a single rather large cavity, the gurgling and other signs of a cavity continued for more than a year after the disease was arrested. The dulness did not diminish, but the chest sank in some degree. Two years after, the signs of a cavity could still be heard; but six months later, they could no longer be perceived. The flattening and dulness have since diminished, though still very apparent. There are no rales, and the respiration is only feeble, almost absent. The voice is different in tone from what it is on the opposite side. It has appeared to me, from the very perfect recovery of the patient, as well as from the change which the physical signs have undergone, that it is possible the cavity may have healed in this case.

CHAP. IV.

VARIETIES OF CONSUMPTION.

CONSUMPTION USUALLY A CHRONIC DISEASE. — ACUTE PHTHISIS. — CASE. — LARYNGEAL PHTHISIS. — FOLLICULAR LARYNGITIS. — CASE. — STRUMOUS INFLAMMATION OF MUCOUS MEMBRANE. — CASE. — PHTHISIS WITH FETID BREATH AND EXPECTORATION. — CONNECTION BETWEEN THIS FORM OF PHTHISIS, AND CHRONIC PNEUMONIA GANGRENE OF THE LUNG, ETC. — THE SYMPTOMS OF THIS FORM. — THREE CASES OF PHTHISIS WITH FETOR OF THE BREATH AND EXPECTORATION.

THOUGH the main features of consumption are similar in all cases, there are some varieties requiring separate notice on account of difference in their severity, and the rapidity of their course, or on account of presenting some additional symptoms which form no part of the disease as it occurs in the form already described.

Consumption is essentially a chronic disease, the course of which is not only slow, but often also, as we have already seen, very insidious. In the very chronic cases, however, which continue for several years, I believe that the disease does not advance uniformly, but, on the contrary, it will almost always be found, from strict inquiry as to its course, that at certain times or seasons the patient has got comparatively well, and the disease has stood still, until some unfavourable influence, acting on the patient, has renewed its activity. In this we have evidence of two opposing forces being at work, one, the destructive force of the disease—the other, the vital conservative power, the *vis medicatrix naturæ* which tends to repress and overcome the first, and which it is one of our main objects of treatment to assist and strengthen.

It is thus we sometimes see the warmth of summer, or the invigorating influence of change of air, chase away the disease for a time, till the cold of winter, or some debilitating influence, again depresses the vital power, and places the disease in the ascendant; and surely in this class of very chronic cases where the intensity of the disease is so weak that it halts from time to time, and we have evidence of the vital force being proportionally strong, there is the greatest encouragement for us to persevere in the use of means to strengthen the vital force opposed to the disease, and, above all, when we consider that this force, unaided, suffices in some instances to save the patient. Between these very chronic cases which last for years, and the acute, or "galloping" form of consumption, stand the great majority of ordinary cases we meet with in every-day practice, the symptoms of which are described in the previous chapter.

Acute Phthisis.—The acute form, commonly called galloping consumption, is a very rare disease, and in the great majority of the rapid cases the disease has been going on unobserved to a certain point, when very acute and urgent symptoms have suddenly manifested themselves.

In the really acute form the patient may be attacked in the midst of apparent health, and the intensity of the disease is such that, like a torrent, it carries all before it, overpowering the vital conservative power so quickly that the unfortunate patient sometimes sinks in so short a space as three weeks or a month. The symptoms differ from those of the ordinary form chiefly in their intensity. There is shivering followed by high fever, cough, and oppression at the chest. The prostration of strength is such as often to make the case resemble typhoid fever, or typhoid pneumonia. The rapidity of the pulse and the dyspnœa are greater than usual; the hectic fever is accompanied with profuse perspirations, and diarrhœa

may be one of the early symptoms. The physical signs are similar to those of congestive bronchitis or pneumonia, from which diseases acute phthisis cannot always be readily distinguished.

Though we meet with many cases of hereditary consumption where the disease is of very chronic nature, and controllable by treatment, the acute form is most liable to attack persons of highly scrofulous or tubercular constitution.

The following is a *case* having many of the characters of acute phthisis, and in which the tubercular constitution was highly developed, and there was rapid simultaneous softening of many small tubercles.

An unmarried woman, twenty-two years of age, of very fair complexion and delicate constitution, was admitted into the Infirmary early in the summer of 1851, with ascites from tubercular peritonitis, and febrile symptoms, with red tongue, diarrhœa and vomiting. Under treatment the fluid was absorbed, and she was discharged greatly improved in health. But she returned in the end of October, and was then much emaciated, and had obstinate diarrhœa, an aphthous state of the mouth, vomiting, and a tender tympanitic condition of the abdomen. The cough was severe, and the expectoration most copious, so much so as to threaten suffocation. She sank in a few days after admission.

P. M. Adhesions were found in the abdominal cavity, and numerous tubercles on the peritoneal surface of the stomach and intestines ranging up to the size of a large pea, and remarkably white. The mesenteric glands were also tubercular. Tubercles were disseminated generally through the lungs, but rather more towards the upper parts. The tubercles were all small, and the most remarkable feature in the case was, that there were scarcely any that had not undergone softening and evacuation, even those not larger than the smallest split pea, so that the

lungs had quite a worm-eaten appearance, and, with the exception of two cavities, the size of small nuts, they were all extremely minute. The rapid simultaneous softening of such a multitude of minute tubercles was no doubt the cause of the copious purulent expectoration and the rapid sinking.

Laryngeal Phthisis.—There is a form or variety of consumption complicated with an affection of the larynx, which produces hoarseness, loss of voice, sense of dryness, pain at the throat, and a feeling of constriction. There is often also, especially when the disease has advanced so far as to produce ulceration, great difficulty in swallowing, a peculiar stridulous cough, and hissing inspiration. In some of those cases of consumption which commence with hoarseness and loss of voice, it seems not improbable that the laryngeal affection may not only be the first symptom, but also a cause of the pulmonary disease, as we know that affections of the glottis and larynx tend to spread inwards towards the trachea and lungs. In other cases, and these certainly the majority, there can be no doubt that tubercles have already begun to form in the lungs as soon as, or before the laryngeal affection shows itself. But under any circumstances chronic laryngeal disease exercises an injurious influence on the lungs, and if it does not produce tubercular disease of the lungs, it always tends to aggravate it; and it is, therefore, a most important practical object to remove the laryngeal complication as far as possible by appropriate local treatment. In the majority of cases of phthisical laryngitis, however, where we have the symptoms of an advanced state of laryngeal disease indicated by purulent expectoration, occasionally bloody, by prolonged difficult inspiration, stridulous hissing cough, difficulty of swallowing, and complete loss of voice, the disease of the lungs will be found in an advanced stage. But such a condition of the larynx so obscures the ordinary physical signs that it is

often difficult to ascertain the exact state of the lungs by auscultation.

I have had occasion to treat many cases of laryngeal disease, and, excluding those of syphilitic nature, I would, in respect to the relation they bear to tubercular disease of the lungs, divide them into three classes,—cases of follicular laryngitis, cases of strumous inflammation of the mucous membrane, and cases of laryngeal inflammation, combined with more or less advanced tubercular disease of the lungs.

Follicular laryngitis is a form of chronic inflammation which may arise from cold or some other irritating cause, being, therefore, often a simple inflammatory disease independent of any other. I have, however, met with it rather frequently in persons hereditarily predisposed to consumption, in whom it is of great importance that such a source of irritation should be removed as speedily as possible, in order to prevent its extension inwards.

We find in this form of chronic inflammation that the mucous membrane is not only inflamed, but that the follicles or crypts, which are so abundant in the parts of the fauces round the glottis and the larynx, are more particularly attacked. These follicles secrete the lubricating fluid which protects the glottis and larynx from the irritating action of the atmosphere; and inflammation of the follicles must excite irritation directly, as well as by vitiating the secretion and depriving the part of the natural protective fluid. On looking at the fauces in such cases we can often observe a dark inflamed condition of the mucous surface with unnatural adhesive secretion, and a rough irregular appearance of the tonsils and back of the pharynx from these parts being studded with little elevations, in the centre of which the follicular openings may be seen. It occurs mostly in persons whose general health is more or less deranged from some cause; and it often arises, in the first instance, from colds attacking the

tonsils, the uvula, and fauces, from which parts the inflammation extends down into the larynx, affecting the voice; and hence the importance of persons of consumptive tendency guarding against this complaint. Follicular laryngitis has been known to occur in persons long subjected to the inhalation of dust. It is also a frequent disease amongst those who are obliged to make great exertions of the voice, and hence public speakers, clergymen, and teachers are subject to this form of disease, which causes hoarseness, and sometimes even, when neglected, complete loss of voice. It would seem, however, in many of these cases, to be more or less connected with dyspeptic, or some other derangement of the health, which prevents the catarrhal inflammation from subsiding, and therefore constitutional, as well as local treatment, is often necessary for its removal.

Follicular laryngitis is attended with a cough, which is generally dry, and of a scraping, clearing description. After a violent effort, however, little rounded pieces of tenacious, dark-coloured mucus are sometimes brought up. The cough is increased by exposure to damp and cold, and by changes in the weather.

The follicular, as well as the other forms of laryngeal disease, may cause slight spitting of blood, and in the following *case* it gave rise to the suspicion that there might be the complication of tubercle in the lungs.

A gentleman, 31 years of age, residing in Cheshire, consulted me in November 1853. He was a fine-looking, tall, muscular man, but he had spat a little blood on several occasions during the previous month. His general health had not been so good as usual; he was paler and thinner; he was hoarse, and had cough, with slight expectoration. He was also rather deaf in the right ear. On looking into the throat, it was found that the tonsils, especially the right, were enlarged. Small holes were visible on them. The follicles of the pharynx were prominent

and red, and the parts generally about the glottis were red and swollen. The back of the pharynx was partially obscured by a patch of greyish secretion. A physical examination of the chest gave no positive evidence of any disease, though there was a suspicion as to the soundness of the right apex. He recovered, however, completely under a tonic plan of treatment and the application of solution of nitrate of silver to the fauces, and has since enjoyed good health.

The *strumous form* of inflammation of the mucous lining of the larynx and parts about the glottis is not attended with much swelling, but the mucous membrane has a red smooth shining appearance; and, behind the velum, the top of the pharynx may be seen covered with a tough yellowish adhesive secretion, which is sometimes detached by coughing, the expectorated matter looking like a piece of skin or membrane. The red inflamed surface from which the secretion is detached sometimes bleeds, and hence there may be expectoration of blood, which causes alarm, lest it may have come from the lungs. Superficial ulceration is also sometimes observed behind the velum, and the morbid condition of the mucous membrane occasionally extends upwards along the Eustachian tube, causing pain in the ear and deafness.

A well-marked and most obstinate *case* of this form of laryngeal affection came under my care in October 1853. The patient was a schoolmistress from the country, aged 23, stout-looking, but not of healthy constitution, several brothers and sisters having died of consumption. Her voice was weak and husky, at times she had scarcely any at all; and she had always more or less dryness, and often a smarting and burning sensation in the throat, which presented the appearance already described. She was carefully treated by topical application of solution of nitrate of silver, and remedies to improve the general health. She became stronger, and the throat got almost

completely well. The affection of the throat returned soon after the treatment was discontinued, and, though it was repeatedly renewed with advantage by myself and other medical men who were consulted, it has not been entirely eradicated. It has proved the most obstinate and unmanageable case I have yet met with.

The *third class* of cases where ulceration occurs along with more or less advanced tubercular disease of the lungs are very distressing ones, and generally attended with great suffering and aggravation of the ordinary symptoms. In this class of cases we rarely see any redness or morbid appearance in looking into the fauces, though I have occasionally seen a speck of ulceration. Cases of this sort are, however, so commonly met with, and so well known to medical men, that I shall not dwell upon them further than to introduce a single severe *case*, which will serve as a good illustration of the pathology of the disease.

Mr. H., 42 years of age, came under my care in a very advanced stage of consumption, and suffering also extremely from laryngeal disease. His voice was entirely lost, so that he could only make himself heard in a whisper. He had been ill eighteen months, and his illness had commenced with hoarseness. He had a most harassing cough of the peculiar stridulous character observed in this disease, and it seemed as if he could never close the glottis completely, so as to aid by the force of the cough in expelling the expectoration. He had dryness of the throat, and the difficulty of swallowing any food or liquid was so great that he was almost starved. The case was so advanced that the usual local applications only increased his sufferings, and the only remedy which afforded any relief was the inhalation of chloroform. On examination after death, it was found that there was an unusual amount of disease of the mucous membrane of the larynx; the morbid appearances extending from the epiglottis to

the bifurcation of the trachea, and the lungs also being tubercular.

The epiglottis was very thick, and of a whitish colour. On each side there was some erosion. The opening of the glottis was eroded from ulceration, especially at the back part, but there was a distinct line of separation between the diseased membrane of the larynx, which was thick and white, and that of the pharynx, which had the natural appearance. The chordæ vocales were destroyed, and the condition of the glottis such that it could not have been completely closed. The mucous membrane of the larynx had a white granular appearance; it was much thickened, and covered with a tenacious muco-puriform secretion. The granular thickened appearance was most marked in the upper part of the larynx, and decreased towards the bronchi.

At the apex of the left lung was a large cicatrix from the healing of an old cavity, and the parts around were puckered and somewhat emphysematous. There was also here some old imperfectly-absorbed tubercular deposit. In the upper part of the right lung there was a considerable quantity of miliary tubercles, which seemed to be the result of a deposit of a much later period. In the lower part of this lung, resting on the diaphragm, an abscess the size of a walnut was found, which had nearly perforated the pleura. It contained a brown fetid matter, and had no distinct walls, the surrounding part of the lung being softened.

This case presented an extreme degree of disease from chronic phthisical laryngitis; and it is interesting also as showing the process of reparation by which a former attack of tubercular disease of the lung had been in a great measure recovered from. The little abscess seemed also to be the result of chronic pneumonia, or tubercular infiltration, and not of common tubercular deposit, illus-

trating, therefore, the formation of abscess with fetid matter, to which we shall direct attention in the next section.

Phthisis with Fetid Breath and Expectoration.—We occasionally meet with a form of consumption in which there is expectoration of fetid matter, and cases of this kind bear, therefore, a resemblance to gangrene of the lung, though the offensive character of the breath and expectoration is seldom so great as in that disease.

There are several diseases of the lung in which a consolidated condition is produced by different kinds of exudation matter being effused into the cells or tissue,—in acute pneumonia, chronic pneumonia, gangrene of the lung, pulmonary appoplexy, and tubercular phthisis. The great difference in the nature of the exudation matter effused in each of these diseases is the cause of the different course of these various forms of disease. The exudation of acute pneumonia is either absorbed or goes on to the formation of pus; that of chronic pneumonia is of slower formation and more permanent nature, less readily absorbed, and it approaches so nearly to the tubercular exudation that in many cases it is not easily distinguishable either in respect to appearance or the course it pursues. The exudation which produces gangrene may be the result of very acute pneumonia in an unhealthy constitution, or of pulmonary apoplexy, or it may arise from the more gradual decay and softening of the exudation matter of chronic pneumonia. There is, therefore, a chain of connection between all these diseases, though the extreme forms are so widely separated; and the points of connection are most apparent in respect to tubercular chronic pneumonia, and gangrenous consolidation. In each of these diseases the exudation may die and be thrown off by ulceration. In true tuberculous disease this is rarely attended with anything offensive in the breath or expectoration, but in chronic pneumonia

the softening of the consolidation is more of the nature of sloughing, and the matter thrown off has more frequently a gangrenous character.

Dr. Addison has described three forms of chronic pneumonia*—the uniform albuminous induration, the granular induration, and the grey induration. The first of these he considers the rarest form, and the farthest removed from tubercular disease. In a *case* of this form which came under my observation in the Royal Infirmary, and where the apex of one lung was the part affected, there were the symptoms as well as the physical signs of the first stage of phthisis, and the patient, a middle-aged woman, died from sinking before any softening of the dense consolidated apex of the lung had occurred.

The second, or granular form, has been considered by Dr. Addison to form a connecting link between phthisical disease and ordinary acute pneumonia. It appears to be the result of inflammation affecting lobules or groups of cells, and the indurated spots scattered through the lung assume the tubercular or raspberry-like form from this circumstance; but these granular indurations, to which the term of inflammatory tubercle has been not inappropriately applied, are softer and tougher than common tubercle. I have no doubt that these granular nodules are of a nature closely allied to tubercle, and I can refer to *two cases* where they were found along with tubercles of older date in the same lungs. One was the case of a man who had tubercular disease of the lungs along with laryngeal disease, for which the operation of tracheotomy had to be performed. The other was the case of a man twenty-six years of age, who was admitted into the Infirmary with pneumonia of seven days' standing, and supervening on old tubercular and emphysematous disease. Tubercles were found in both lungs, and cavities lined with well-organised membrane at the apex of the left.

* Guy's Hospital Reports.

There was emphysema and lobular pneumonia scattered through both lungs. There were also found, especially in the lower part of the left lung, and towards its anterior border, rounded irregular-shaped bodies, the size of peas, like tubercles, but redder, tougher, and softer. The bronchial mucous membrane was intensely red, and it seemed as if the inflammation had extended from it to the lobules and groups of cells, which latter, becoming consolidated, had assumed the tubercular form.

The third, or grey form of induration, is often of a very dark or bluish colour; it affects most frequently the middle or lower lobes, and the indurated part is sometimes almost as hard as cartilage. The following *case* affords an illustration of this form.

A man, sixty years of age, was admitted under my care in the Infirmary, in the beginning of the summer of 1849, with bronchitis and emphysema of the lungs. He had acute febrile symptoms, during which dulness came on at the lower part of the right side posteriorly. By blistering and other means, however, he recovered, and his health afterwards improved very much under the use of cod-liver oil and other remedies. He then went to Bedfordshire, and worked during the rest of the summer. In the end of September, soon after his return to Liverpool, he took cold, and was re-admitted with severe cough and bronchitis. Dulness on percussion was again found in the same part of the right side, and increased after admission. The usual remedies were employed without effect, and he sunk under the complication of disease. The lungs were emphysematous, and there was a dense thick adhesion of the right pleura binding the lower two-thirds of the lung. The lower third was consolidated, of a dark bluish grey colour, and some parts were almost as hard as cartilage. There were three cavities in this indurated portion, the largest the size of a walnut.

There were no tubercles except a cretaceous one about the centre of the left lung. There were some morbid appearances in the liver and kidneys.

In all these forms of induration, if the exudation matter is such that it cannot be readily absorbed, it breaks down like tubercle, and hence these forms of chronic pneumonia cause the formation of cavities which are scarcely different from tubercular cavities. In proportion as the exudation matter is further removed from that of acute pneumonia it approaches towards tubercle; and in fact some of these kinds of induration are almost or altogether identical with the infiltrated form of tubercle. The softening and ulceration in some of these forms of pneumonic induration may be very rapid, in fact, a kind of sloughing process; and the expectorated matter is then of an offensive or gangrenous nature, which is rarely the case with ordinary tubercle; and I believe that in the great majority of cases, where the breath and expectoration acquire an offensive odour, we have to deal with either gangrene or chronic induration from pneumonia. It has been affirmed that acute bronchitis, supervening on the chronic form of the disease, may cause fetor of the breath and expectoration; and I have seen, while writing this part of the work, a case in which it was present, where there was cirrhosis of one lung, and carnification of the other from copious pleuritic effusion, without any appearance of slough or cavity; but I believe that it rarely occurs in a well marked degree, except from gangrene, chronic induration, or pneumonic abscess. We know, however, that fetor of the breath may also be produced by sloughing of the walls of a tubercular cavity, and by fetid matter in the pleura communicating with the bronchial tubes.

The variety of phthisis arising from chronic induration of the lung, resembles in many of its symptoms the ordinary form of phthisis, but there are points of difference by which they may often be distinguished. We frequently

find that the disease has begun suddenly from a distinct cause, and has commenced with a severe pain in the chest, which subsides, but is liable to recur from time to time. The febrile symptoms are often very acute at first, and the loss of flesh and strength more rapid than in the early stage of ordinary cases of phthisis. The expectoration is generally thinner and of a more dirty colour. I have seen it cease almost entirely for a day or two, and then a large quantity of almost pure pus has been brought up. In more than one instance I have observed repeated attacks of spitting of blood. Fetor of the breath I believe to be a frequent and characteristic symptom of the disease. The hectic fever and night perspirations are often severe, and diarrhœa also occurs. The complexion not only becomes pale, but I have also observed it unusually sallow. The progress of the disease may tend rapidly to a fatal termination where the induration is extensive or breaks up quickly; but it may also be very chronic, and in one case which came under my observation it lasted for two years.

Those whose opinions are opposed to the curability of tubercular consumption have endeavoured to get over the evidence furnished by the cicatrices and other appearances of the healing or absorption of tubercular disease of the lungs, by attributing such appearances to the healing of pneumonic or gangrenous cavities. I believe, however, that the cavities which are produced by the softening of the forms of induration described, are scarcely, if at all, more amenable to treatment than those of tubercular nature. The difficulty of getting tubercular cavities to heal arises, not merely from the constitutional nature of the disease and the general nature of the deposition, but from the constant motion, and the exposure of the lungs to the action of the air; which latter circumstances are equally opposed to the cicatrization of all kinds of cavities.

Though it has been thought that the disease is most common in persons beyond the middle period of life, I have met with several cases in young persons; and a young lady from Derbyshire was placed under my care, who was only sixteen years of age, and had been ill for five months. The breath and expectoration were extremely fetid, and she had the signs of a large cavity in the lower part of one of the lungs posteriorly. I was also consulted in the case of another young girl of a similar age, with the same symptoms, but with physical signs indicating a cavity in the upper part of one of the lungs.

The physical signs are similar to those of the ordinary form of phthisis; but as the middle and lower parts of the lungs are most frequently affected, we generally find the signs of consolidation and excavation in the lower parts of the chest.

The *three* following *cases* will illustrate some of the preceding observations.

A strong-built man, thirty-seven years of age, who had been quite well until six weeks previous to the 5th of July, 1849, was admitted under my care in the Infirmary; he had caught cold after being heated, and he had suffered from cough, pain in the side, and expectoration of blood before admission. He had then dulness on percussion and feebleness of respiration below the right scapula. He was blistered, and was so much relieved by this and some expectorant medicine, that he became an out-patient towards the end of the month; but he was re-admitted on the 17th of September, after having spat a large quantity of blood. The expectoration and breath were then very fetid. Creasote with an expectorant mixture was ordered, and he afterwards took cod-liver oil. During October he expectorated much greyish dirty fetid matter, and occasionally some blood, the signs of consolidation rather increased; on the 22nd there was large mucous crepitation, and on the 27th, after ceasing to expectorate for a day, he brought

up a rather large quantity of purulent matter. The signs of a cavity were perceived after this at the lower part of the lung. He took cod-liver oil, and used counter-irritation, but did not improve till the 1st of November, after which he began to gain flesh. Though he sometimes spat blood, and had attacks of pain, for which blistering was required, he upon the whole improved in flesh and strength; taking cod-liver oil till the end of the year, when he had gained nearly two stones. The sound on percussion had then become considerably clearer at and below the lower angle of the scapula. There was very little mucous rale, but the respiration in this part was still bronchial, and the voice and cough loud. The expectoration diminished and lost its fetid character, and though he had some hæmoptysis on the 24th of February, he was able to become an out-patient at the end of the month.

On the 15th of July, 1850, he called at the Infirmary to show himself and return thanks. He had never been so well since his illness, and he thought himself almost as strong as he had ever been. He had spat no blood, and had then very little cough or expectoration. There was considerable dulness on percussion over all the lower and lateral part of the right side. The respiration was pure and free from rales, but harsher, and the voice and cough louder, and the vibration stronger than on the left side.

On the 31st of October, 1853, I was requested to see a medical man about fifty-two years of age, who had suffered on a previous occasion from an attack of pleuro-pneumonia, and had also, twenty years before, spat up a cretaceous body. He belonged to a consumptive family. He had, before I saw him, been actively treated by local depletion and blistering, on account of pain in the left side, and signs of pneumonic consolidation. He had a weak pulse, 124, severe cough, with muco-puriform expectoration, which, as well as the breath, became gradually

more fetid, and the patient himself complained of fetid puffs of wind rising into his nostrils. Counter-irritation was kept up; he inhaled creasote, and took nitro-muriatic acid, with which cod-liver oil was afterwards conjoined. Under this treatment his pulse appeared to improve; it fell to 100, and he was able to leave his room. On the 26th of November he spat up about four or five ounces of matter tinged with blood; after which, without any change in the physical signs, the pulse rapidly descended and remained at 84. He then improved very quickly, and was able, though weak and thin, to resume his practice. A few months after, he had an attack of apoplexy, of which he died. A *post mortem* examination was not, however, obtained.

The next *case* is a very remarkable one, for there was not only extreme fetor of the breath and expectoration, but an abscess communicating with the lung, also pointed externally, and was opened, and yet the patient recovered.

A ship carpenter, aged thirty-six, was admitted under my care in the Northern Hospital, on December 6th, 1848. More than twelve months previous, he had been attacked with spitting of blood, and other pulmonary symptoms, which had never entirely left him. He was much emaciated, and had profuse perspirations; he expectorated large quantities of puriform secretion of an offensive odour; and, when he coughed, his breath was insupportably offensive, scarcely less so than in cases of gangrene. The left lung was extensively diseased. There was a great amount of dulness, extending from the clavicle into the mammary region. There was the gurgling of a large cavity below the left nipple. Below the clavicle, there was the gurgling of smaller cavities, as well as the subcrepitant rhonchus, indicating extensive softening of tubercular matter. There were no decided indications of

disease in the other lung. He was treated with mild mercurial aperients, and a sedative mixture for the cough; and as he had much pain in his left side, a blister was applied. On the 11th, cod-liver oil was prescribed. Below the left nipple, where the large cavity was found, a fluctuating tumour formed, and was opened on the 14th. When he coughed, air was expelled along with matter, showing that the abscess communicated with the lung. He continued taking the oil till the 23rd, when he was somewhat better; but as it caused nausea it was omitted, and he took a mixture composed of creasote, oxymel of squills, and compound tincture of camphor, with great benefit; the abundant purulent expectoration being much lessened by it. On the 1st January, the cod-liver oil was resumed, in two drachm doses; and in a fortnight from that time, he had improved in a remarkable manner, he had gained flesh, and considered himself half a stone heavier. His countenance had assumed a cheerful and more healthy appearance, and his skin had become soft and smooth. Though he had some return of the pain in the side, and the abscess was opened more than once, he continued to improve steadily, after recommencing the oil. On the 4th of February, he had every appearance of health; the abscess had all but healed, his appetite was good, and the expectoration had almost ceased. There was considerable contraction of the left side of the chest, and a great amount of dulness. The lung had been extensively excavated; but the progress of the disease was now arrested, and instead of the gurgling and rhonchi indicating the passing of air through muco-purulent fluid, there was heard the dry blowing of air passing into empty cavities. On the 16th February, he considered himself capable of following his employment, and left the hospital to go to New York.

Abscess of the lung rarely points externally as in this case. I met, however, with another case in a woman, who had all the usual symptoms of the ordinary form of consumption. A distinct fluctuating tumour, about the size of an egg, formed beneath the clavicle. It was resolved, in consultation, not to open it, but to treat the case with constitutional remedies. As the health improved, the tumour gradually disappeared, and the tubercular affection of the lungs was arrested.

CHAP. V.

RELATION OF CONSUMPTION TO OTHER DISEASES.

ITS RELATION TO SCROFULA. — PROOFS OF THEIR BEING DIFFERENT FORMS OF ONE DISEASE. — LIABILITY OF DIFFERENT ORGANS TO BE AFFECTED WITH TUBERCULAR DISEASE AT DIFFERENT PERIODS OF LIFE. — RELATION OF TUBERCLE TO FATTY DEGENERATION. — CASE. — ARE TUBERCLE AND ATHEROMA RELATED? — DISEASES ANTAGONISTIC TO CONSUMPTION. — EMPHYSEMA AND ASTHMA. — RELATION OF GOUT AND RHEUMATISM TO CONSUMPTION. — FALLACY OF OPINION AS TO THE ANTAGONISTIC POWER OF AGUE. — INFLUENCE OF PREGNANCY ON CONSUMPTION.

We have in the preceding chapter seen how nearly allied tubercular consumption is to chronic pneumonia. Its relation to other constitutional diseases of tubercular and non-tubercular nature is too extensive a subject for investigation in this work, but it embraces so many points of practical interest that it cannot be altogether passed over, and I shall therefore briefly notice some of the most important.

Scrofula is a disease which assumes various forms and attacks different organs of the body in different individuals, as well as in the same individual at different periods of life. Tubercular consumption is the form it most frequently assumes in adult life, and therefore consumption has a more intimate relation to scrofulous than to any other class of diseases. The identity of the two diseases is so generally acknowledged, that it is unnecessary to prove it here, but I may advert to a few facts which at once show their close connexion.

We not unfrequently see the two diseases hereditarily transmitted in the same family, one member being attacked

by some scrofulous affection, and another by tubercular disease in the lungs, or in some other organ. We often, also, see consumption in the children of scrofulous parents, and likewise *vice versâ*, scrofula in the children of consumptive parents.

Their identity is further shown by the fact, that we not unfrequently see the two diseases existing together in the same individual, and we still more frequently find the one disease succeeding the other. It is thus we often find a child that has had scrofulous enlargement of the glands, or a strumous affection of the eyes become consumptive at a later period, when the tendency to pulmonary disease is increased by age. There is no essential difference in the nature of tubercle, in whatever organ of the body it is deposited.

Though scrofulous and tubercular diseases prevail at all periods of life, it is well known that different organs and parts of the body are more liable to be affected at different periods of life. Lugol considered scrofula an active disease at the earliest period of life, and that it was a frequent cause of abortion. In early infancy hydrocephalus, from tubercular inflammation of the membranes of the brain, is the most common form of scrofulous disease. Tubercle in the brain itself scarcely ever occurs after the age of puberty, and is most common in childhood and youth, at which periods there is also the greatest liability to enlargement of the external lymphatic glands, and to tubercular deposit in the bronchial and mesenteric glands. The relation between phthisis and chronic tubercular peritonitis is so close, that the latter scarcely ever exists without the former, an illustration of which has been given in the case related at page 56. The fact has been already pointed out, that it is from the age of puberty till past the middle period of life that tubercular disease of the lungs is most prevalent, though no age is altogether exempt. Whether the commonly received opinion, that

scrofula after this gradually tends to wear itself out during the decline of life be correct, is a matter that appears to be deserving of further investigation. It is possible that fatty degeneration of internal organs—the heart, arteries, kidneys, and liver, resulting from decay of their nutrition, may be more common in those of the scrofulous diathesis. I was led to think that there might be some connexion between tubercular disease and fatty degeneration, from observing the *case* of a highly scrofulous boy, who was admitted under my care in the Infirmary. He was fourteen years of age, dwarfish, and had scrofulous enlargement and ulceration of the external glands. The liver was palpably enlarged, and the urine albuminous. In addition to this, he had the usual symptoms of phthisis, cough, expectoration of blood, and latterly of fetid matter, after which he rapidly sunk. Tubercular disease was found in both lungs—in the upper part of the left, and the lower part of the right. The lower half of the right was completely consolidated by tubercular infiltration, which at the base was in an advanced state of softening; and in this situation, there were three abscesses imperfectly separated from each other, and containing dark-coloured pus, mixed with gangrenous-looking pulmonary tissue. The bronchial glands contained cheesy tubercular matter, and the liver and kidneys were both enlarged and fatty.

This remarkable case, which was published at greater length in a clinical lecture in the "Medical Times and Gazette," led me to think that there might be a closer relation between fatty degeneration and scrofula and tubercle than that of mere accidental complication. Fatty degeneration of the liver and kidneys have been looked upon as diseases, in some measure, of scrofulous nature, and the common occurrence of the former, as a complication of phthisis, is well known. In connexion with the albuminous condition of the urine, dependent on

the fatty form of Bright's disease of the kidney in the preceding case, I may remark that this form of renal disease is not a very unfrequent concomitant of consumption. Dr. Theophilus Thompson has stated that he examined the urine in ninety cases of phthisis at the Hospital for Consumption, and found it albuminous in two only. But this, I am sure, is a smaller proportion than would be found in the phthisical cases of other hospitals; for I have met with albuminous urine along with consumption in many cases, both in hospital and private practice. In such cases, there is usually a tendency to vomiting as well as dropsy. I have looked upon the albuminous condition of the urine as an indication of fatty or scrofulous degeneration of the kidneys, and have regarded the relation between the renal and pulmonary disease as more close than that of accidental complication.

The relation of tubercular disease to fatty degeneration of the heart and atheroma of the arteries, embraces also its relation to apoplexy and palsy, as we know that the latter are almost always produced by disease of the heart and arteries.

It has been affirmed that tubercle is of the same nature as atheroma of the arterial coats, but we must have other than microscopic proofs before we admit such a proposition, which is opposed to all that we know as to the pathological relations of tubercular disease. It is well known that disease of the heart is a very rare complication of phthisis, and aneurism is scarcely ever found in those dying of consumption. Again, if we turn to apoplexy and palsy, we do not find any proof of these diseases being more common in persons of scrofulous and tubercular constitution. I have seen several instances in which paralysis occurred in phthisical patients, but not so often as to lead me to think that there was any close relation between them.

Life Assurance Companies are careful in ascertaining

the individual history of proposers, with the view more particularly of excluding those hereditarily predisposed to tubercular disease, and Dr. Christison* has published an "Investigation of the Deaths in the Standard Assurance Company," and Dr. Begbie* has also published "Medical Statistics" with reference to the Scottish Widows' Fund; but the facts from these sources do not appear to show any connexion between tubercular and atheromatous diseases. Dr. Christison tells us that a large proportion of the deaths from apoplexy and palsy actually arose among what appeared to be select lives, from which we may presume that no hereditary tubercular tendency was ascertained to have existed. A considerable proportion of those whose deaths were caused by disease of the heart and large vessels, appear also to have been select lives. Neither Dr. Christison nor Dr. Begbie seem in these investigations to have traced any relation between tubercular disease and those arising from cardiac and arterial degeneration.

There are some diseases which have been considered to be antagonistic to consumption, and it has been thought possible that the presence of another disease might counteract the tubercular tendency; but all diseased action injures the general health more or less, and practically we have no reason to think that any diseased action can be set up or advantageously promoted with the view of repressing phthisis.

Emphysema of the lungs, which is a common cause of asthma, has often been found in conjunction with partially absorbed or obsolete tubercular deposits and contractions of the lungs; and there appears to be some ground for thinking that it may act antagonistically by diminishing the quantity of blood in the lung. On the other hand, it would appear that the contraction consequent on the arrest of tubercular disease has a tendency to produce emphysema.

* The Monthly Journal of Medical Science, vol. xvii.

Hasse observes, that "those much in the habit of examining the dead body cannot but be struck with two circumstances: first, the almost invariable existence of emphysema in lungs which bear the characteristic marks of recovery from phthisis; and, secondly, the proportional rareness of tubercular deposits in emphysematous lungs. This would seem to show, that dilatation of the air-cells constitutes one of the conditions under which the cure of phthisis is possible; and, again, that it forms an obstacle to the development and progress of tubercle." * Rokitansky thinks that emphysema hinders the formation of tubercle, by inducing a state of venosity of the blood, in which it is imperfectly arterialized, and wanting in fibrin. To the same cause he attributes the rare occurrence of tubercle in those cases of disease of the heart and arteries which prevent the proper arterialization of the blood. His observations on the connexion of tubercle with other morbid states are of the deepest interest; and, if his explanation of the effect of emphysema and disease of the heart, in repressing the deposition of tubercle, were correct, we should see an object which we might seek directly to attain in treating tubercular diseases. I am, however, disposed to think that emphysema may have merely a local effect in preventing the formation of tubercle; for the quantity of blood circulating in the capillaries of an emphysematous portion of lung is much diminished, and hence we find that pneumonia is less apt to attack such parts. We have already alluded to Dr. C. J. B. Williams's opinion, that an undue flow or accumulation of blood, from congestion or inflammation, will hasten the maturation of tubercles, by exalting chemical affinities; while, on the other hand, they manifest little disposition to change, so long as they are kept free from

* Hasse (C. E., M.D.) Anatomical Description of the Diseases of the Organs of Circulation and Respiration. Translated by W. E. Swaine, M.D. Sydenham Society. 1846. p. 313.

superfluous moisture. In this way emphysema may prevent their progress, by lessening the quantity of blood in the capillaries; and it is also worthy of observation, as supporting this view, that in some cases of phthisis, where the function of one lung has been arrested by perforation, the progress of the disease has (where the patient has recovered from the immediate effects of the accident) been for a considerable time arrested. Of this, some examples have been given by Dr. Stokes. If Rokitansky's view of the venosity of the blood retarding the advance of tubercles were correct, we should find the progress of the disease repressed in both lungs; but I believe that this occurs chiefly in that lung the function of which is arrested; and indeed, if this were the true explanation, then tubercular deposition in the lungs, by impeding respiration, and thus causing a more venous state of the blood, should tend to arrest its own development.

Rheumatism and gout are diseases which have been considered antagonistic to consumption. I have, however, met with a considerable number of cases of consumption complicated with chronic rheumatism; and I believe that they are antagonistic to this extent, only, that the two diseased actions do not generally exist together with equal force at the same time. In the case of a lady I have attended with tubercular disease of the lungs, there is also enlargement of the small joints of the hands from rheumatic gout. At one period, soon after a confinement, the tubercular disease assumed an active condition and made progress, and then she had complete freedom from pain in the hands. Her general health was afterwards improved, and the tubercular disease was suspended in its progress, and then again she had a return of the rheumatic pain in the hands. There appeared therefore to be in this case an antagonism to this extent, that, though the two diseased states co-existed, they controlled each other so far as not to proceed together with equal activity.

Ague is another disease, the antagonistic power of which seems to have been greatly over-estimated, for Dr. Peacock * has lately shown that the two diseases are occasionally met with together, and that any controlling power which ague may exert is too trifling to deserve consideration.

The arrest of the development of tubercular disease of the lungs during pregnancy is an important fact; and though it has been disputed, I believe there are few medical men who have not had opportunities of observing it. I had under my care a young female, advanced towards the fourth month of pregnancy, in whom one lung was destroyed to nearly half its extent by cavities. She had obstinate diarrhœa, and was reduced to the last stage of emaciation and debility. Yet, as soon as she was made aware of being pregnant, it had such a cheering effect upon her, that she speedily began to recover, believing that all her illness arose from that cause; and thus the disease was arrested for a time. Rokitansky's mode of accounting for the antagonistic effect of pregnancy in consumption, by referring it to the venosity of the blood, induced by the enlargement of the abdomen interfering with respiration, is too mechanical an explanation, and not at all satisfactory, as it is by no means proved that the blood is imperfectly arterialized during pregnancy. The demand for an increased supply of blood for the uterus and its contents, is a much more important change, through which we may endeavour to explain the arrest of the tubercular disease. It is a fact, that the blood, instead of becoming more venous, contains an augmented proportion of fibrin; and the growth of the fœtus seems not only to require this, but, by attracting it to itself from the lungs, to arrest for a time the morbid process of nutrition in these organs.

* The British and Foreign Medico-Chirurgical Review, Jan. 1859.

CHAP. VI.

THE CURABILITY OF CONSUMPTION.

HOW FAR THE TERM CURABLE IS APPLICABLE TO CONSUMPTION. — MEANING OF TERMS, ARREST, SUSPENSION. — EVIDENCE IN FAVOUR OF CURABILITY — FROM PATHOLOGICAL FACTS. — ABSORPTION AND OBSOLESCENCE OF TUBERCLES. — CHALKY AND CALCAREOUS TRANSFORMATION. — HEALING OF ULCERS AND CAVITIES OF THE LUNGS. — FREQUENCE OF PATHOLOGICAL PROOFS OF RECOVERY. — ANSWER TO SOME OBJECTIONS. — EVIDENCE FROM RESULTS OF ACTUAL PRACTICE. — PROGNOSIS AS INFLUENCED BY SYMPTOMS, STAGE OF THE DISEASE, ETC. — NINETEEN CASES, SHOWING HOW FAR RECOVERY MAY CONTINUE PERMANENT WHEN THE DISEASE IS ARRESTED, AND ILLUSTRATING CHIEF INDICATIONS OF TREATMENT. — REMARKS ON CASES, AND SUMMARY OF RESULTS.

THE curability of consumption is a subject of deep interest; and, though the opinion has been rapidly gaining ground that the disease is far more amenable to remedial means than was at one time believed, the propriety of using the term of curability at all in reference to consumption has been called in question. We know that if tubercle be absorbed, it is hardly possible it could be even thus removed, though it is the least injurious mode, without some permanent injury to the air-cells; and there is no other way in which it could be eliminated, or cured, without greater destruction of the tissue of the lung. Consumption is also a constitutional as well as a local disease, and hence there is a liability to a recurrence or to fresh attacks from the primary constitutional cause, as well as from the local weakness induced by a first attack. These are some of the reasons why the terms of arrest and suspension have been so often used in reference

to this disease rather than the word cure; but, though it is hardly possible to affirm in any case, where an amount of disease has existed sufficient to cause well marked physical signs, that a perfect cure has been accomplished, and we can scarcely ever, therefore, feel sure in such a case that the disease will not return, yet pathological investigations have proved in the clearest manner that the disease admits of perfect as well as of the partial cure which must be understood by the terms of arrest and suspension; and I am persuaded that there are a greater number of cases where the disease is permanently arrested, and, therefore, really cured, in the early stage, before the physical signs are well marked, than is commonly believed.

The evidence in favour of the curability of tubercular disease of the lungs is derived from several sources. By inquiring of our patients closely into the history of previous attacks of illness affecting the chest, we occasionally find that at some period they have had many of the symptoms of consumption, and have yet recovered. This alone is the least important kind of evidence, but it becomes valuable when supported by some of the other kinds. Observation of the symptoms, in cases which come under our treatment, and get well, stands next in value. The examination of the chest with the stethoscope and by percussion, gives, when the disease has advanced a certain length, to those who are well acquainted with these modes of examining the chest, most satisfactory evidence of the condition of the lungs during, and even after, recovery. A few medical men, however, who still neglect this important source of information, think that they have a right to question any evidence derived from it. The last kind of evidence is visible and palpable, and cannot, therefore, be doubted. It is derived from examination of the lungs after death.

The evidence from all these sources may be combined

in a single case; but, for this purpose, it must be watched during a series of years, and hence such cases are not very frequently recorded. When the evidence is thus united, it may fairly be questioned if medical testimony furnishes stronger proof on any subject.

We shall first examine the evidence derived from pathological facts, looking at the subject as an abstract question, independent of any particular mode of treatment; and afterwards inquire how far it is in accordance with the results observed in actual practice.

EVIDENCE FROM PATHOLOGICAL FACTS. — The pathological facts, in reference to the curability of phthisis, furnish the kind of evidence which is least questionable. In examining them, I would first call attention to the circumstance, that many medical men, seeing their patients frequently die of phthisis, have become so incredulous of the possibility of recovery, that when they have seen a patient recover after having presented the usual symptoms, they have distrusted their diagnosis, and have taken the fact of recovery as a sufficient proof that the disease could not have been tubercular consumption.

Now, it is worthy of notice, that Bayle *, who I have already observed has probably swayed the opinion of medical men on this point more than any other individual, acted precisely in this way. In his work he published five cases of recovery from symptoms of consumption; and because they recovered, though all the symptoms were present, he regarded them as cases not of consumption, but as simulating this disease. In two at least of these cases, 50 and 51 †, the symptoms were unequivocally those of consumption; and of the first he observed, "A

* Recherches sur la Phthisie Pulmonaire, 1810.

† I find, from Andral's edition of Laennec's work, that case 51 came under the notice of Laennec, who found some years after, from examining this patient with the stethoscope, that he must have recovered from tubercular disease. It forms the 28th case of the edition referred to.

l'époque où je traitais la malade, j'avoue que je la croyois atteinte de la phthisie pulmonaire." Why, then, it may be asked, if he believed at the time he treated the case, that it was consumption, did he change his opinion when recovery took place, and not take it as a proof of what it really was — recovery from consumption? It is evident that he did so, (and other medical men do likewise,) because he had seen many die of the disease, and because he had overlooked the pathological proofs of recovery, and had observed only that tubercles increase very generally, and cause an amount of disorganization which he regarded as irreparable; he therefore prejudged the question, instead of forming his conclusion from rigorous examination of his cases. Pathological investigations show that such is not only an illogical, but a most erroneous mode of forming an opinion; and prove also, that many persons who have never had more than a moderate amount of pectoral symptoms, must have recovered from this disease.

Laennec, in a chapter in his work, entitled, *Examen de cette question: La guérison de la phthisie, est-elle possible?* had the merit of first proving that phthisical persons may recover, by the cretaceous transformation of tubercular matter, as well as by the cicatrisation of cavities. He investigated the subject very fully, and detailed ten cases, in three of which the healing of cavities was traced by the stethoscope, and recovery took place after all the worst symptoms had supervened. In seven other cases, where the patients were phthisical, but died of other diseases, he ascertained how recovery might take place by absorption of crude tubercles, and transformation into cretaceous or calcareous concretions; or by the softening and evacuation of tubercular matter, and the lining of the cavity so formed by a false membrane of cellular, fibrous, or cartilaginous texture, and also the complete disappearance of the cavity by the formation of a cicatrix. These facts were con-

firmed by Andral; and even Louis, who does not take by any means a favourable view of the curability of phthisis, and is more sceptical than most men as to any good effect from medical treatment, relates three cases of recovery; one in a man, 45 years of age, who, after presenting all the usual symptoms, as well as the physical signs, and keeping his bed for six months, recovered, and returned to his occupation; the second, in a man, 50 years of age, who had cavernous respiration and pectoriloquy; and the third, in a gentleman of rank, who consulted him several times during a period of eight years, for trifling attacks of acute pulmonary catarrh, and afterwards died of a painful affection of the urinary passages. It was then discovered that he had a cavity at the summit of the right lung, and near to it two tubercles. This patient enjoyed robust health, with the exception of being subject to attacks of cold, and would probably have continued to do so, but for the other disease, of which he died.

We have already seen that tubercle may exist in the lungs in three principal states or stages, being found in the earliest stage in the form of small granulations, in size and appearance like grains of sago or millet seed; in the second stage, forming rounded masses, from the size of a pea to that of a walnut, or even larger; and, in the third stage, in the form of ulcers or cavities resulting from the suppuration of the tuberculous matter. Pathological facts show that the recovery may take place in each of these stages. The evidence they furnish of its occurrence in the third stage by cicatrisation is the most perfect, that of its occurrence by cretaceous transformation is the most common, and the evidence of its occurrence in the first is the least common,—a circumstance, however, which does not lead us to believe that it is really the least frequent; but, on the contrary, that all trace of the disease is removed in the earliest stage by absorption; that therefore we must not look to pathology to furnish a kind of evidence

which it is incapable of doing, but must receive the more satisfactory, but less palpable kind, furnished by the recovery of our patients after they have presented the early symptoms and signs of consumption.

Absorption and obsolescence of tubercles.—It was at one time regarded as doubtful whether tubercles could be absorbed; and Andral* noticed the wrinkled appearance they sometimes assume, as showing the possibility of their being thus removed. We often observe their removal in this way, when deposited externally in the glands; and Boudet, who has paid much attention to the changes they undergo in the lungs, has observed that they are not unfrequently absorbed partially, but rarely entirely. Dr. Hall, though he admits that tubercle may be absorbed, thinks that its capability to undergo perfect and entire removal by absorption in any case is unproven and improbable. I am, however, convinced from what I have seen in the lungs of persons dying of other diseases, that it may be so completely absorbed as to leave no visible trace. We sometimes find one or two cretaceous tubercles with such condensed appearances in other parts, as indicate that a larger amount of tubercle must at one time have been present. I observed this particularly in the *case* of a gentleman who had many years before his death all the symptoms of consumption, but died from fatty disease of the heart. Two or three cretaceous bodies scattered through the lungs were almost the only evidences of tubercular disease having existed, though the severity of his symptoms had at one time been such as to cause him to spend a winter in Madeira. Dr. Cotton appears to entertain a similar opinion, for he observes—"The possibility of tubercle becoming absorbed has been much questioned; but I have witnessed so many instances in which the recovery was complete, and all evidence of

* Précis d'Anatomie Pathologique, tom. iii. p. 545.

pulmonary disease was entirely dissipated, after every general and physical symptom of tubercular deposition had been most unmistakeably manifested, that I cannot for a moment doubt its occasional occurrence, less often, it is true, than we could desire, but still sufficiently frequent to encourage hope, and to lead to a steady perseverance in those measures which are likely to promote it."

The miliary granulations, which Laennec considered the first stage of tubercle, and in which opinion he has been confirmed by Louis, are believed by Rokitansky to be, in many cases, merely a kind of fibrin. He considers that this form or stage of tubercle may undergo a kind of metamorphosis, which he calls *obsolescence.* "After the tubercle has passed through its condition of crudity, it loses its shining appearance and increases in density, becomes converted into a small hard lump, and then shrinks into a tough amorphous or slightly horny mass—cornification. It forms the basis of a complete destruction or death of the tubercle, and no further metamorphosis can take place."*

Louis, also, in speaking of these bodies, says: "It would even appear, from the interesting researches of M. Papavoine, that in persons of adult, and more especially of advanced age, granulations of considerable size and cartilaginous aspect are sometimes found, containing osseous particles, as though the grey semi-transparent granulations were capable of undergoing transformation without previously passing through the tuberculous stage properly so called."

Chalky and calcareous transformation of tubercles.—I have now to draw attention to the transformation of crude tubercles into cretaceous bodies, which is the mode of recovery of which pathology furnishes the most frequent proofs.

* British and Foreign Medico-Chirurgical Review, vol. i. 1848.

M. Rogée, in an able paper on the Curability of Phthisis, in the *Archives Générales de Médecine* for 1839, has proved in the clearest manner that the *chalky* as well as the *calcareous concretions*, resembling small stones, which are so often found in the lungs, are the result of the transformation of tubercles. There are many facts which prove this; the situation of these concretions, generally at the summit of the lung, sometimes in the midst of a group of tubercles, and often in a cavity from which the greater part of the tubercular matter has been evacuated. Tubercles are also sometimes found evidently undergoing this transformation, presenting the appearance of having become smaller, and being more opaque and whiter than other deposits in the same or in the other lung. If further proof were wanted, it might be found in the fact that crude tubercle, when dried, assumes a chalky appearance similar to that of these concretions. I had an opportunity of seeing tubercular matter in great quantity in every stage of transformation, in a woman who died in the Liverpool Infirmary of tubercular peritonitis. The abdominal cavity contained a very large quantity of a matter like mortar, and the mesenteric glands exhibited almost every form of tubercular disease, some being in the state of crude, cheesy tubercle, and others undergoing transformation. The liver was also fatty in this case; a fact tending to show that the fatty degeneration of the liver, which so often occurs in pulmonary consumption, cannot be ascribed to the function of respiration being interfered with, but that it bears a relation to tubercular disease generally, and is most frequently found in pulmonary consumption, only because the lungs are the organs in which tubercles are oftenest deposited in abundance.

When crude tubercle undergoes the cretaceous transformation, the animal matter must be removed by the vessels absorbing it; but the quantity of earthy matter is so much greater than what is contained in crude tubercle,

that there must be a secretion of earthy salts at the same time, and this sometimes appears to take place into empty cavities also. Dr. Hughes Bennett considers the tendency of tubercular matter to disintegrate as highly favourable to absorption, if fresh deposits could be prevented; and Rokitansky observes, in reference to cretifaction, that it occurs as a secondary change, never attacking tubercle in its original form, but confining itself to the dissolving and dissolved blastema. It is easy to conceive that, when the corpuscles of tubercle have broken down into the granular state, they must be more within the absorbent power of the vessels; but the fact of the yellow crude tubercle being sometimes observed undergoing cretaceous change without softening, would seem to show that it is at least not necessary that it should undergo such a degree of disintegration as that which immediately precedes the evacuation of tubercular matter. It is worthy, however, of remark, that transformation commences, as softening has usually been observed to do, at the centre of tubercles; and Dr. Valleix* has observed that we sometimes find a tubercle having a hard calcareous concretion at the centre, round this cretaceous matter, and at the circumference a layer of tubercular matter. Boudet affirms, that transformation may take place in all the phases of their evolution; in the state of crudity, or of softening, when in the form of grey granulations, or of yellow tubercles.†

The softening of tubercle, Dr. Williams thinks, is promoted either by a deficient supply of blood, which does not maintain its imperfect vitality, or by an undue flow or accumulation of it exalting chemical affinities in a material which has no vital power of resistance.

Healing of cavities.—Such are some of the chief facts

* De la Curabilité de la Phthisie Pulmonaire, *Archives Générales de Médecine*, 1841.

† Recherches sur les Transformations des Tubercles, *Comptes Rendus*, 1843.

relating to the curability of consumption, by absorption and transformation of tubercle; but pathological researches furnish us with further evidence of the possibility of recovery in a more advanced stage, in the discovery of cicatrices produced by the healing of cavities at the summit of the lungs. Rogée has described four kinds,—those with persistence of the cavity; those in which the cavity contains some chalky or calcareous matter; those cicatrices which are fibro-cartilaginous; and those of cellular structure. There is usually some depression, or puckering, of the summit of the lung, where these cicatrices are discovered, and the surrounding pulmonary tissue is often of a dark colour, and indurated. These appearances may be regarded as some evidence of the former extent of the disease. Dr. Carswell has observed, that there may remain only a small globular oval, or even linear portion of fibrous, or fibro-cartilaginous tissue, in a portion of the lung, where, from the extensive puckering around it, there must formerly have existed an excavation of considerable extent. The healing of cavities has been observed in every stage; and it would seem that the disease may be arrested, or at least become quiescent, even after it has produced great disorganisation of the lungs, of which we have a remarkable example in a case related by Dr. Kingston.*

These two modes of recovery, by cretaceous transformation, and by the healing of cavities, are both not unfrequently met with together in the lungs of the same individual after death from other diseases. I might refer to many cases which have come under my observation, but two will suffice for illustration. In the *case* of a patient who died at the age of forty-five, of cancerous disease of the stomach and liver, I found a few cretaceous tubercles, the size of small peas, at the top of the right

* Medico-Chirurg. Trans., vol. xx. 1837.

lung, and also the puckered appearance resulting from the healing of a cavity.

The second *case* was one in which cretaceous tubercles were found along with a puckered cicatrix, which must have resulted from the healing of a cavity. The patient was a gentleman about fifty years of age, who died suddenly of another disease, aneurism of the aorta, and I had an opportunity, along with Dr. Ramsay and Mr. Fletcher, of making an examination. In the upper part of the left lung there was a portion very much puckered, in and around which five or six cretaceous tubercles were found. One of the tubercles was surrounded by a thick capsule or cyst, and another cyst was opened which contained only a thin yellow fluid. On cutting into the most depressed and puckered part, a radiating appearance, caused by fibrous bands concentrating towards a point, was found, and there could be no doubt that this star-like cicatrix had resulted from the contraction and obliteration of a cavity, seeing that cretaceous tubercles containing crystals of chlolesterine existed in the surrounding tissue. I have no history of the case further than that the individual had lived many years in the West Indies, and had latterly suffered from symptoms of heart disease. There can, however, be little doubt that, at some period, probably early in life, active disease of the lung existed, but that the constitutional powers gained the ascendancy; the cavity contracted, and at last completely healed, while those tubercles, not eliminated or absorbed, underwent transformation, and ceased to cause further irritation.

There are few medical men, who are in the habit of observing the *post-mortem* appearances in the lungs, who have not had opportunities of seeing cretaceous tubercles, and even the less frequent appearance of cicatrices and puckerings at the summit of these organs. The facts, indeed, are so palpable, that they have never been disputed;

but they were for a long time looked upon rather as rare and curious examples of what nature could do where art had failed, than as important practical facts, which should lead us to observe carefully the favourable circumstances under which the changes are brought about, with the view of arriving at a more successful method of treatment. Thus Sir J. Clark, after quoting Dr. Carswell's remark, that pathological anatomy had perhaps never afforded more conclusive evidence, in proof of the curability of a disease, than it had in that of tubercular phthisis; and also his clear description of the modes in which it is accomplished, observed — "In recording these proofs of the curability of pulmonary tubercles, I think it right to remark that I do not attach much importance to them, further than that they afford encouragement to persevere in our endeavours to correct the tuberculous diathesis, seeing that nature can remedy the disease, when it is not very extensive."

Frequence of pathological proofs of recovery. — These appearances are not, however, by any means rare; indeed, they are very common. Rogée found that, of one hundred aged persons who died at the Salpêtrière, there were fifty-one of this number who had concretions and other traces of tubercular disease of the lungs. In five of the cases he also found the cicatrices of cavities which had healed; and he states that in the course of a single year he had been able to collect ten or twelve incontrovertible examples of the same kind. "J'insiste sur ce fait de fréquence, car c'est là que gît, à mes yeux, le point capital, le côté nouveau de la question. Les médecins instruits d'aujourd'hui ne nient guère qu'on ait vu *quelquefois* la phthisie guérir; mais pour eux cela tient du miracle tant c'est rare: ils n'osent jamais l'espérer. Puisse-je avoir réussi à convaincre que la guérison est assez commune quand la maladie n'est pas fort avancée, et qu'on a droit

de la chercher avec espoir." * In 197 subjects, Boudet found ten with cavities completely healed; and within one year he also collected fourteen cases of recovery from phthisis.

Dr. Hughes Bennett † also found in seventy-three bodies which he examined, that there were concretions and puckerings in twenty-eight. He also ascertained that these traces of the removal of tubercles are most common in elderly persons; for, in twenty-eight cases, he found puckerings and concretions in only three individuals of the age of eighteen, in six between that age and forty, and in nineteen after that epoch of life. Dr. Stokes, when he published his work, was strongly in favour of the view, that patients sometimes recovered from phthisis; and he laid down the favourable indications, which he considered to justify the medical man in attempting what he called the curative treatment. Dr. Williams has also argued in support of the curability of phthisis, and has stated that he found phthisical lesions in the lungs of half the adults beyond the age of forty that he had examined, and that nature resists the progress, and limits and circumscribes the extent of the disease.

Answer to some objections. — These pathological observations are, as Louis has remarked, "assuredly of immense importance," and they form a body of facts which do not admit of being controverted. But it may be said that the disease had in such cases been of only limited extent, and had not presented the ordinary symptoms, but been latent. There can be no doubt at all that the chance of recovery must be greatest where the disease (due regard being paid to its duration) is least extensive; yet I believe that, in cases where pathological proofs have been obtained, it has

* Essai sur la Curabilité de la Phthisie Pulmonaire, etc. *Archives Générales de Médecine*, 1839.

† Frequent and Spontaneous Cure of Pulmonary Consumption: *Edinburgh Medical and Surgical Journal*, 1845.

seldom been so limited that the individual had not at some period perceived some of the symptoms of consumption. A sufficient number of cases has also been recorded to prove, that, in cases of recovery, the disease has not always been of limited extent. As an example, I might refer to a case published by Professor Bennett, in the "Monthly Journal of Medical Science," since the first edition of this work appeared. The patient was a man who at the age of 22 laboured under all the symptoms of deep decline, but recovered, and died at the age of 50 of an affection of the brain. The apex of both lungs contained cretaceous tubercles, and were puckered, and the cicatrix, or scar, at the summit of the right lung, was from a quarter to three-fourths of an inch in breadth, and three inches in length.

Those who are unwilling to admit the possibility of perfect recovery from consumption, urge another objection, on the ground that it is a chronic disease of long duration. Though this must be received as a reason for doubting the completeness of recovery in individual cases, and shows that those who have made some progress to recovery should be careful in avoiding the causes which might induce relapse; yet it is an objection, almost equally applicable to other diseases which are apt to return, and it is overturned by the weight of positive proof furnished from the pathological and other sources. In, however, maintaining that recovery may thus be perfect, we at the same time admit that, while most diseases have a disposition to return, in constitutional diseases like consumption we have not only the local but also the constitutional tendency to a return; and we not unfrequently observe appearances in the lungs which show that the patient was progressing towards recovery, until a second crop of tubercles was deposited. The long duration of consumption in many cases, may however be viewed in an encouraging as well as a discouraging point of view, seeing that it gives

a corresponding period of time to contend with and treat the disease.

I have already observed that we can seldom combine in a single case the various kinds of evidence in favour of curability derived from the history of the patient, the symptoms, and the physical signs observed during the life of the patient, and the appearances seen in the lungs after death. The following, however, is a very interesting *case* which came under my own observation, and where we have evidence derived from all these sources.

Miss C., a lady about forty years of age, tall and of large frame, came from Warrington on the 25th of November, 1852, to consult me. She had been ill with cough and other symptoms of consumption for five years, and her illness had begun at that time with spitting of blood, but she had also had an attack of spitting of blood about twenty years before. She had consulted many medical men, and had been told, at an early period of her illness, by a physician in London, that her left lung was much diseased, and her case altogether a hopeless one. She had been most persevering in the use of cod-liver oil, and when I saw her, was still taking it under the advice of Dr. Stokoe. She was pale, and her flesh was soft and relaxed. The tubercular disease of the lungs was arrested, she had scarcely any cough or expectoration, and the pulse was only 80. Beneath the right clavicle the sound on percussion was clear. Immediately below the left, it was less clear than on the right side. In the left mammary region it was decidedly duller than natural. Respiration was harsh in this situation near the sternum, and more externally cavernous respiration and pectoriloquy were very distinctly audible. Some mucous rales could also be heard. A tonic plan of treatment with quinine and sulphate of zinc, and the continuance of a moderate quantity of cod-liver oil, were recommended.

I did not again see her till the 11th of January

following, when a new set of symptoms had developed themselves. She then had pain at the stomach, with sickness and vomiting of every kind of food, but no pulmonary symptoms. Some of the ordinary means relieved these symptoms, but, ultimately, everything failed, and Mr. Atcherly (who attended the case with me) and I were obliged to trust almost entirely to the use of nutritive injections containing wine and brandy to support the patient. She rallied, however, so far as to be able, about the middle of February, to return to Warrington, where she was sustained in the same way, and by minute quantities of light nourishment taken by the stomach, till the 23rd of April, 1853. During that time no new symptom of importance showed itself, except that, on one occasion, she lost a large quantity of blood from the bowels.

The patient having, during her life, expressed a wish, that after her death an examination should be made, and the case being a most interesting one in reference to the arrested disease of the lungs, as well as the obscurity of the gastric symptoms, I went over to Warrington, and with Dr. Stokoe and Mr. Atcherley, made an examination. The right lung was healthy, with the exception of a single dark-coloured old tubercle at the very apex. The left pleura was extensively adherent, and at the posterior part of the lung, four inches below the apex, there was a very distinct cicatrix running transversely, an inch in length, and penetrating half an inch into the lung. It must have resulted from the healing of a cavity of very considerable size. Deeper still there was a cavity the size of a moderate walnut, lined with a thick rather soft membrane, and filled with a thick secretion of a greyish white colour, more consistent than pus, and not unlike sebaceous matter. In front, the upper lobe was contracted and more dense than natural. About an inch and a half below the apex there was a cavity smaller than the first, and lined completely with a firm well-organised fibrous membrane.

The tissue of the lung, lower down, was firm and rather shrunk, and it contained two or three small cyst-like cells filled with a thin yellowish fluid. In their vicinity there were one or two very small cretaceous bodies, the sole remnants of absorbed tubercles; and as the lungs were in other respects healthy, and the two cavities in process of contraction, or at least producing no injurious effect upon the health, there is no reason to doubt that, so far as the lungs were concerned, this individual might have lived to an advanced age.

An examination of the liver and stomach showed at once the cause of the distressing sickness, vomiting, and pain, from which she had so long suffered, and proved that she had not died from the pulmonary disease, but from *cancer* of the *liver*. There were several white tubera of soft cancer, some of which had become adherent to the stomach, and ulcerated through it; but there was no cancerous disease of the stomach itself.

This is undoubtedly one of the most interesting cases on record. It furnishes a most important link in the chain of evidence in favour of the curability of consumption, and also of its curability by treatment. Reparation was not only carried so far forward by absorption and elimination of the tubercular deposit, which was almost wholly removed, and the two remaining cavities so nearly healed that no injurious effects could afterwards have been produced by them on the health of the patient, but the tubercular diathesis itself had been so completely eradicated that another—the cancerous, usually considered to be almost incompatible with the tubercular—had sprung up in its place.

Evidence from Results observed in Practice.—Having now proved from the preceding facts, that the possibility of recovery is no longer a matter of doubt, though it is equally certain that the further the disease has advanced,

the less is the probability of any of these favourable changes occurring, I proceed next to the second branch of this subject, and to inquire from the results of actual practice how far there is reason to hope that recovery may be permanent or lasting in cases where consumption is arrested or suspended.

This is a subject of momentous interest to those who have tubercular affections of the lungs, and we are often pressed very hard by patients, as well as their friends, to give a decided opinion on it. Experience will constitute the best guide in enabling us to reply in a sufficiently precise and at the same time guarded manner, and, after offering a few remarks on the subject, I shall bring forward a series of cases which will serve as the best illustration of the results of treatment with reference to the point under consideration.

In speaking of the varieties of consumption, we have already observed that the disease is much more acute in some cases than in others, and in general the rapidity of the pulse is a good indication of the active nature of the disease, which will almost always be found in a state of suspension or quiescence when the pulse is habitually between 70 and 80. As a general rule, the prognosis is more favourable the earlier the stage of the disease; but when it is chiefly confined to a single lung, and still more when it is circumscribed to a limited portion of it, this is sometimes a more favourable condition, even though limited disease may have advanced into the third stage, than when we have a more general deposition of tubercles that have not undergone softening. There are also some individuals of phlegmatic temperament in whom the tubercular deposit causes comparatively little irritation, whereas in others it causes frequent harassing cough, and a greater liability to inflammatory attacks, which hasten the progress of the disease. The degree of permanence of recovery is, therefore, a matter which must be influ-

enced by many circumstances: such as the greater or less degree of constitutional tendency to tubercular disease; the natural rapidity or slowness of its progress; the care which the patient himself may take in efficiently and perseveringly carrying out the proper means of treatment; his position in life, and the power he may thereby possess of guarding against, or removing himself from, the operation of injurious influences, which tend to reproduce the disease, as well as the extent and stage of the tubercular affection. These points will, however, be best illustrated more fully in connection with the succeeding cases. Most of them, I may observe, have been already published in previous editions of the work, but I am now able to give later particulars of several of them, and on this account I consider them more valuable from the length of time they have been under observation, than a long list of more recent cases which it would have been easy to introduce here. I have also endeavoured, in selecting the following *nineteen cases*, to bring out the most important indications in the treatment of the disease:—

Case 1.—I was consulted, in the beginning of December, 1849, in the case of a delicate youth, thirteen years of age, of pale complexion, and the son of a gentleman of very scrofulous constitution, who had lost several relatives from consumption. He had been confined to the house more than a month with cough, which had alarmed his parents. He had occasional perspirations at night, and some expectoration in the morning. He was easily flushed, and had been losing flesh, but the appetite and digestion were still pretty good. Beneath the centre of the left clavicle there was evident flattening, and in this situation the sound was less clear on percussion, and the expansion on full inspiration less perfect than on the opposite side. In this part respiration was harsh and somewhat bronchial in character, but no rales were audible on

either side. He was treated by counter-irritation, mild nutritious diet, and cod-liver oil, and very soon improved so much as to be able to take active exercise in the open air. By the 11th of January he had gained flesh, colour, and strength in a striking degree. On the 1st of March I again saw him; he then looked as well as before his illness, and had entirely lost his cough, but continued to take the oil. On examining the chest I found a decided change; there was no flattening or dulness below the left clavicle, expansion on full inspiration was as perfect as on the opposite side, and there was no appreciable difference in the respiration on the two sides.

This patient, whose case has been twice published already in previous editions, has grown up to be a healthy young man, and has had no return of the disease up to the beginning of the year 1859.

Case 2.—In consultation with Mr. Atcherley, I saw, on the 24th of December, 1850, a little boy, three years of age, who had been ill a month with cough, loss of flesh, and profuse night perspirations. The child was very pale and weak. At the upper part of the left side of the chest, in front as well as behind, there was very decided dulness on percussion, and respiration on this side was feeble when compared with the right. The physical signs of consolidation at the upper part of the left lung were so well marked that, viewing them in connexion with the general symptoms, neither of us had any doubt of the existence of tubercular deposit. The child was treated with expectorant medicines, counter-irritation, and cod liver oil, and under this treatment there was a speedy improvement, which has been maintained. Having heard from Mr. Atcherley that the child continued quite well, I went with him, on the 11th of March, 1853, to examine the chest for my own satisfaction. He was running about, quite well and fat, but he had a fine skin and delicate complexion, his mother observing that his colour was that

of a girl rather than of a boy. On examining the chest I found below the left clavicle rather less elasticity on percussion than on the right side. Any remaining dulness was scarcely appreciable. Posteriorly there was no difference, and the intensity of respiration seemed equal on the two sides. At this early period of life, when the nutritive functions are most active, it is probable that tubercular disease may be more perfectly removed than in those in whom the lungs and other organs have attained their full growth and development, provided due attention be paid to those hygienic prophylactic means which are even more necessary in those who have been attacked with the disease than in other children who are only hereditarily predisposed.

Case 3.—A gentleman about twenty-eight years of age consulted me, in the spring of 1851, on account of severe cough without expectoration. The cough was dry and very irritating, and the patient was much changed for the worse in appearance, and had been losing flesh rapidly. The sound on percussion in the right infra-clavicular region was less clear than on the left side, and over the cartilage of the fourth rib there was a prominence where the dulness was well marked. Respiration was feebler here than on the left side, and the resonance of the voice considerably louder than natural; but there were no rales or any sign of softening having yet taken place. Behind, there were similar signs of consolidation in the situation of the spine of the scapula. In this case immediate change of air, morphia with squill, and cod liver oil were prescribed with remarkable benefit, and the patient began to improve soon after going to the country. My opinion as to its nature was confirmed by that of two eminent physicians, who subsequently examined the chest and detected the same signs. In September following, when I again examined his chest, I found that the signs of consolidation were not entirely removed, some dulness on

percussion and feebleness of respiration, but less marked, still existing in the situation of the cartilage of the fourth rib. He had no cough then, and his health was exceedingly good. This patient has felt it necessary to be careful of his health, but during the following winter he was able to attend to the duties of his profession, having recourse occasionally, by way of precaution, to the use of cod-liver oil. When in March 1853, I had an opportunity of seeing him he had been perfectly free from cough and his health was excellent, and has continued so to 1859.

Case 4.—M. G., aged fifty, a man of dark complexion and rather thin, was admitted into the Liverpool Royal Infirmary, under my care, on the 18th of March, 1850. He stated that for fifteen years he had been subject to cough, especially in winter; and ten years ago he had so much cough, emaciation, and expectoration, that his medical attendant did not expect him to recover. Three years ago he was again so ill as to be unable to work for five weeks. Twelve months since he spat a considerable quantity of blood, and for six weeks before admission he had been unfit for any work, suffering from cough, expectoration, night sweats, and debility, with considerable emaciation and shortness of breath. Below the right clavicle there was dulness, some sibilant rale was audible, and the respiration had a bronchial character. He was treated with sedative expectorant remedies, cod liver oil, and mild counter-irritation, by means of an embrocation containing acetum cantharidis. His health improved under this method of treatment, and on the 27th of April he had very little cough, the expectoration was trifling in quantity, he had no perspirations at night, his appetite was good, he had become stouter, and wished to return to his work. The dulness below the right clavicle was still perceptible, but rather less so, and the respiration was free from any rales.

This case is condensed from the report of it in my work, in order that I may now state that I had an opportunity of again seeing the patient on the 4th of November following, when he was at work, free from cough, and enjoying good health. It is one of those cases of the chronic form of phthisis where the tubercular matter has probably undergone some cretaceous transformation.

Case 5.—A gentleman, aged thirty-nine, tall, and of bilious temperament, placed himself under my care, on the 17th of December, 1850, on account of frequent hacking cough, but with scarcely any expectoration. He had been ill nearly two months, and stated that two years previous he had suffered from a less severe and protracted attack, from which he had recovered under the care of a Dublin physician. He was pale and thin, and had night perspirations. After being treated, for a short time, with tonics and expectorants, which afforded only some temporary benefit, the chest was examined. Some depression was found below the left clavicle. On this side the sound on percussion was less clear than on the right, and two or three inches below the clavicle it was decidedly less resonant, respiration being also, in this spot, interrupted and mixed with a few mucous bubbles. Under the use of cod-liver oil, sulphuric acid and quinine, counter-irritation, and other appropriate treatment, his health improved very greatly, and he became much stouter. When examined, about the middle of April, the difference in the clearness of sound on percussion of the two sides of the chest, was very trifling, and there was no mucous rale anywhere. An eminent physician, in Dublin, who was also consulted in this case, took so unfavourable a view of it, that he thought it indispensable that the winter should be passed in a warmer climate. The patient was, however, able to attend to the duties of his profession during the succeeding winter, without any permanent return of cough; and, during the past winter, he has only once

required my services for a trifling cold—his general health continuing excellent up to this time, April, 1853.

Up to this year, 1859, his health has kept good; he has been able to go through much fatigue, and has not suffered from pulmonary weakness.

Case 6.—In May, 1850, I was consulted respecting the health of a young lady, twenty-one years of age, of pale chlorotic complexion, and delicate constitution. She had then a cough which had also been present three years before, so as to cause some alarm, and the opinion was obtained from a physician that the upper part of the left lung was not perfectly sound. Change of climate, however, and other treatment, succeeded in restoring her health at that period. When visited by me she was very weak, she had dry cough, and became flushed with the least agitation or excitement. Decided, but not extensive, dulness on percussion, was discovered at the apex of the left lung in front. Respiration was somewhat weakened in this situation, but it was free from any of the abnormal sounds which indicate softening of tubercular matter. The opinion was therefore formed, that tubercles had been deposited in a limited spot, and had probably existed for a considerable period without tending to soften; and the hope was entertained that, by improving the general health and restoring regularity of menstruation, which was then scanty and irregular, the quiescent state might be maintained for an indefinite period of years. These indications having been carried out by chalybeate tonics and cod-liver oil—the lady has since married, and though she had a premature confinement, a satisfactory state of health has been maintained, and when I had, in April, 1853, an opportunity of seeing her ordinary medical attendant, he informed me that, though still rather a delicate person, she had been recently confined, a second time, and that she and the child were both doing very well.

In February, 1856, I had, when in attendance on her

mother-in-law, again an opportunity of seeing her, and ascertaining that she was then in good health.

Case 7.—A married lady, aged twenty-six, consulted me in the beginning of April, 1850. She stated that her father had died of consumption, and that, in April, 1849, she was confined, three weeks after which she was seized with cough, and continued to get gradually worse under the care of her ordinary medical attendant. In September, she consulted a physician, who caused her to wean her child, and put her upon a course of treatment of which the use of cod-liver oil formed an essential part. Having examined her chest, he told her friends that her case was a very hopeless one. She was then very weak and emaciated, and had profuse night sweats, and abundant expectoration; but her appetite improved, and the cough and other symptoms abated so much, that she was encouraged to persevere with the oil. In consequence, however, of the unfavourable opinion which had been given, she placed herself under my care. She had kept the house, carefully, during the winter, being very susceptible of cold; she was weak, though not thin, the flesh soft, and the skin so relaxed that she perspired easily, and hence the liability to attacks of cold. There was profuse menstruation, leucorrhœa, and some tendency to diarrhœa. The cough was not severe, she slept well, and expectorated but little. Below the left clavicle there was considerable depression, the sound on percussion was decidedly duller, and the elasticity less than on the right side. Respiration was feebler on the left side, and interrupted, occurring in whiffs, especially about two inches below the centre of the clavicle. There were no rales or other signs of active disease. This patient improved remarkably under the tonic plan of treatment detailed in my work, where these observations with reference to it were made:—"Not having seen this case at first, it is impossible for me to form an opinion as to whether a

cavity had existed or not. There can, however, be no doubt that the tubercular matter is now in a quiescent state; and, as the nutritive functions have received a healthy impulse, we may hope that by maintaining this, by removing any urgent symptoms as they may occur, and by improving the general health by tonic means and by change of air, the health of the patient may be sustained till the tubercular matter has been absorbed, or rendered innocuous by cretaceous transformation."

These favourable anticipations have been fully realized, for this lady has improved in health, and has since had an addition to her family. In March, 1853, she called twice upon me, along with friends who wished to consult me. She informed me that, after her confinement, she had spat some blood, but had never been better than since then: she had no cough, looked stout, and had no sign of active tubercular disease, but there was the same deficiency of clearness and elasticity, on percussion, below the left clavicle.

Case 8. — A lady, twenty-four years of age, rather tall and thin, consulted me in June, 1851, on account of an attack of pain in the left side of the chest. She had not much cough at that time, but had been ill two years previous, with all the worst symptoms of consumption, including spitting of blood. She had the opinion of an eminent physician in London, who concurred with her ordinary medical attendant, in thinking her case a very hopeless one. She returned, however, to the country; and, under the persistent use of cod-liver oil, and other means, the disease was so completely arrested that she had passed the previous winter without suffering almost at all from cough; and continued in the enjoyment of pretty good health till she had the attack for which she applied to me. On examining the chest I found, about two inches below the centre of the left clavicle, where she had been told that the disease existed, and at the spot in which she

then had pain, a slight depression; and there was dulness on percussion, not very great, but well marked. Respiration in this spot was weak, somewhat bronchial, and jerking. At the end of a deep inspiration, especially after coughing, some dry crackling crepitation was audible. This, and also some peculiar dry creaking sounds, are frequently heard in cases of arrested phthisis. The exact cause of these new sounds, and whether produced in the tissue of the lung, or on the pleural surface, cannot, in all cases, be certainly known. In this instance, as the crepitus was superficial, and accompanied with pain and scarcely any cough, I considered that it was produced by slight inflammation in a part where old adhesion probably existed. Mild counter-irritation was therefore applied, and alterative mercurial aperients given so as to regulate the digestive functions which were much disordered. The occasional resumption of the cod liver oil was recommended, and also a tour on the continent, which proved of great service to the general health. This lady has since been confined, without any untoward circumstance, and she is now, February, 1853, free from cough, and in the enjoyment of as good health as she has ever had.

I had the opportunity of seeing this lady more than once during the year 1858, and ascertained that she has not recently suffered from cough, and has enjoyed very good health.

Case 9. — A gentleman, of a consumptive family, aged thirty-five, came from Warrington on the 17th of October, 1851, to consult me by the recommendation of Dr. Stokoe, his usual medical attendant. His breath was very short, his cough frequent and troublesome, and his pulse 120, very weak. Mucuous and sibilant rales were heard generally over the chest, before and behind on both sides, showing that there was bronchitis; but, as these rales were most abundant at the upper parts of the chest, and there was flattening below the clavicles, especially on the

left side, where there was also some dulness on percussion, we formed the opinion that tubercles also were present. He was first treated by blistering and a stimulating expectorant mixture. After this cod-liver oil was taken to the extent of an ounce thrice a day, and a milder form of counter-irritation was kept up by the application of croton oil embrocation. This constituted the chief treatment, which was so successfully carried out by Dr. Stokoe that, when I again saw him, on the 12th of December, he had become stout, and so strong that he had been able to walk six miles. His pulse, which had been 120, was only 86. He had no longer any night sweats, and very little cough, with which there was some trifling yellow expectoration, in the morning. On examining the chest, the only abnormal sounds found were slight but distinct dulness below the left clavicle, and a few clicking bubbles in the same situation. When first seen he had been so weak and tottering that I did not examine the vital capacity of the chest by the spirometer, but it was now found to be 235 cubic inches, and as his height was scarcely five feet eleven inches, this was not more than 25 below the healthy standard. There was a steady increase in the weight of this patient after taking the oil. Weight, 1st November, 1851, 10 st. 12 lb.; 21st December, 12 st. 4 lb.; 22nd January, 1852, 12 st. 8½ lb.; 12th April, 12 st. 10½ lb.; 2nd May, 12 st. 12 lb. This patient continues (April, 1853) to enjoy very good health.

Case 10. — W. Murray, a sailor, aged 21, was admitted into the Royal Infirmary, on the 6th of December, 1849, with cough and other well marked symptoms of consumption. His mother had died of this disease, and he had been ill for three months, during which time he had suffered from two attacks of spitting of blood. His countenance had a shrunk and faded appearance, and he was weak and considerably emaciated. His cough was violent, and he frequently vomited with it. The expectoration

consisted of some ropy white mucus, he had perspirations at night, and pain below the right clavicle, and the breath was short. The skin was hot, the pulse 90, the tongue furred, and the bowels costive. There was well marked dulness below the right clavicle, harsh respiration with sibilant rale, loud prolonged expiration, and loud resonance of the voice and cough. He was treated with alterative mercurial aperients, cod-liver oil, and inunction of a small quantity of iodide of mercury ointment below the right clavicle. He speedily improved under this treatment, but a small quantity of the tubercular matter softened, and a very small cavity formed at the right apex. He was made an out-patient on the 24th of January, but continued under treatment till the 27th of February. He was then a good-looking young man, stout and muscular, with a healthy colour. On examining the chest I could find scarcely any dulness below the right clavicle. There were no rales or signs of any secretion, but respiration was rough, and the expiratory murmur prolonged; the resonance of the voice and cough was also louder than on the other side.

This case was published at length in my first work, and again in a condensed form in my subsequent "Report on the Progress of Improvement," &c., where it was stated that I had had an opportunity, more than a year after, of seeing the patient several times. He was in the enjoyment of good health and free from cough. On examining the chest I still found slight deficiency of clearness on percussion below the right clavicle, and harsh, rather feeble respiration, but no sign of any return of active disease.

Case 11.—A gentleman, thirty-one years of age, one of whose sisters had died of consumption, became affected with cough about Christmas, 1848. He had felt languid and out of health all winter, and towards the middle of May, while walking upon the street, he was attacked

with spitting of blood. The attack was severe, and did not stop till he had coughed up nearly a pint of blood. I saw him in the beginning of June along with his ordinary medical attendant. He was then pale and weak, but had not lost flesh to any great extent, though he had the usual symptoms of consumption. About three inches below the right clavicle very decided dulness on percussion was found, and in the same situation there were all the signs of a cavity of considerable size. The disease was arrested by country air, counter-irritation, and the prolonged use of oil and other means. I examined the chest on the 20th of April, 1849, and found considerable depression and some loss of elasticity in the situation where the cavity had been found, but the dulness was less marked. There was dry harsh respiration, and loud resonance of the voice, but none of the former signs of a cavity. He looked remarkably stout and well, and scarcely coughed at all, except a few times in the morning, when he brought up a little mucus. This case was recorded in my work as a satisfactory one of recovery after a cavity had formed. I must now however state, that the disease returned; he had an attack of spitting of blood, after which the usual symptoms of consumption again showed themselves, and he died in the beginning of April, 1852. In this instance, therefore, the disease returned and proved fatal, after having been arrested, in a very complete manner, for nearly four years.

Case 12.—Thomas Hanlon, aged twenty-seven, was admitted into the Royal Infirmary, on the 21st of February, 1850, with all the usual symptoms of advanced consumption, and having also the physical signs of a large cavity towards the upper part of the right lung. There were also the signs of an earlier stage of the disease in the left lung. He remained two months in the institution, at the end of which time I succeeded in arresting the disease, and he was then in such an improved state of health that

he was able to return to hard work; and he maintained himself by his own labour till the following December, when he again presented himself for admission, in consequence of having been attacked with acute inflammation of the upper part of the left lung. He had been employed as a fireman, and the attack had been brought on by exposing himself to the cold air when in a state of profuse perspiration. On his second admission he had a stout healthy appearance, much more so than when he had been discharged in the preceding March. This corresponded with the statement he made, that previous to the attack of inflammation he had been in good health, and almost entirely free from cough. By means of blistering, and other active treatment, I succeeded in removing the inflammation of the lung, but the tubercular disease which had been quiescent was again lighted up into activity, and fresh cavities formed at the upper part of the left lung. I again, however, after three months' treatment, succeeded in suspending the progress of the disease, and he so far regained his health that he was able to go out, and again maintain himself by his own labour, from March till November, 1851. He was then admitted the third time, labouring under another acute attack brought on in a similar way. He had acute bronchitis, with great congestion of the lungs, and he expectorated large quantities of thin serous fluid. This attack proved fatal in a few days.

The post mortem examination was highly interesting, as it showed the condition of the lungs in a case where the tubercular disease had been arrested, and the death of the patient was not the direct effect of this, but of an acute inflammatory and congestive attack; and as it proved also how much may be done, even in an advanced case, to arrest and also repair the injury done by tubercular disease. The right lung was firmly adherent at the upper part. Near the apex, anteriorly, there was a cavity large enough to contain a large apple, having an irregular

surface with projecting ridges, as if formed by the union of several small ones. It was lined with a greyish white membrane, which was well organised, and evidently contracting. There were some deep red spots and patches upon it, apparently indicating the occurrence of recent inflammation in the new structure. In the centre of several of these spots, small openings into the bronchial tubes were perceived, and seemed to show that inflammation had extended from the bronchi. The walls of the cavity were very hard. The apex of the lung was very dense, and there were tubercles and small cavities in this part. Below the large cavity there was another the size of a walnut, and lined with a white membrane, free from any purulent secretion. At the apex of the left lung there was also a large cavity lined in the same way, and throughout both lungs there were tubercles more or less advanced, and generally of a dark colour, proving that they had not been recently deposited.

The powerful effort made on the part of the constitution, when assisted by proper treatment, to repair the local injury here, is particularly worthy of notice; and this was so far successful that the cavities were lined by membranes which did not secrete any matter, and were contracting. This process had arrested the disease on two occasions, and prevented it proving fatal in the ordinary way—that is, by hectic fever and the exhausting discharge of purulent matter. In all cases of suspended phthisis, such exposure to cold as suddenly drives the blood from the surface to the lungs, or even a rapid fall of temperature in-doors may, when the pulmonary circulation is obstructed by tubercular disease, produce such congestion, dyspnœa and copious serous expectoration, as occurred in this case. In some its force will be expended in causing inflammation of the pulmonary tissue rather than of the bronchial mucous membrane; and in other cases the congestion may be relieved by spitting of blood.

It is therefore a matter of primary importance in all cases where consumption is arrested, to prevent the occurrence of such congestion by every means at the command of the patient; and I can conceive that, if this patient, instead of being obliged to work hard, had been able to pass the winter in a mild climate, or with such comforts as wealth could afford, the issue might still have been pending. In another case of arrested consumption, where the patient died of serous apoplexy, (tubercular meningitis?) with copious effusion in the ventricles of the brain, having been ill less than twenty-four hours with the head symptoms, I found the condition of the lungs such as has been now described, cavities lined with fibrous membrane not secreting pus, and the tissue of the lung, where the tubercular matter had been deposited, unusually hard.

Case 13.—A very tall gentleman, aged twenty-four, came from Oldham to consult me, on the 4th of July, 1851. He stated that he had begun to feel weak, and his health had declined from November, 1849. In May, 1850, he had cough and some expectoration, but no night sweats till the following month. He commenced taking cod-liver oil in May, but did not improve very decidedly, and in July was worse than he had at any time been. In September he spat blood. He passed the winter in Hastings, still using the oil and keeping up permanent counter-irritation over the chest. Upon the whole he did not lose ground there, though his strength rather declined. On his return to Oldham, five weeks before he visited me, there was a decided improvement in his strength. I found him rather stout: the cough affected him chiefly in the morning, when he had still some expectoration. The pulse was 78, the tongue clean, the digestive powers good, no thirst and no night perspirations. The examination of the chest showed the existence of a very considerable amount of disease at the upper part of the left lung, much more than one should have been led to expect, in judging

from his appearance. The conformation of the chest was unusual; the sternum was prominent, and there was flatness on each side, especially below the left clavicle, and the shoulders sloping very much gave the whole chest a remarkable conical appearance. The sound on percussion was not clear beneath either clavicle, but it was duller below the left than the right. Respiration was less distinct, and had less of the vesicular character below the left; and in this situation there was some dry crackling crepitus at the end of full inspiration. The crackling extended considerably below the nipple, and also laterally; but it was most distinctly audible immediately below the scapular end of the clavicle. Below the right clavicle respiration had a harsh character, and the voice and cough were loud. The condition of the patient at the time of consulting me was, upon the whole, rather satisfactory, the disease being then stayed in its progress. His objects were therefore to have himself placed under a plan of treatment, by which the improvement already effected might be carried forward still further, and also to know my opinion as to whether it might be desirable for him to try the effect of removal to the climate of Australia. My opinion was, upon the whole, rather favourable to removal, provided the improvement in his health should continue to advance during the summer. The means used having succeeded in attaining this object, he went out to Australia, and his subsequent progress I give in the words of his father's letter to me:—"He arrived in Melbourne, May 21st, in improved health. His cough was still a little troublesome, but he had expectorated none for two months previously. His strength was increased, appetite excellent, sleep sound. The last letter I received from him came by the Marco Polo, and was dated October 12th. He stated that he continued to improve. The fine spring weather had set in, and he found the air exceedingly soft and balmy, but, at the same time, very

stimulating,—quite of another character from any climate he had ever experienced. He had begun again to take cod-liver oil. He had left off taking it at sea, having no proper medicine to take it in. A physician of Melbourne had examined him with the stethoscope when he landed, and again in October, and he stated that he was much improved."

Case 14.—A gentleman, twenty-two years of age, who had lost a brother and a sister from consumption, placed himself under my care, on the 19th of August, 1851, on account of cough, loss of flesh and strength, and the usual symptoms of consumption, with considerable hectic fever. The physical signs indicated very clearly that a small quantity of tubercular matter was deposited at the apex of both lungs, and was in the process of softening. There was slight dulness at the upper part of the chest, in front, on both sides, and a few moist clicking bubbles. He had pain beneath both clavicles, and considerable constitutional disturbance. The tongue was furred, the pulse 90. There was thirst, and the digestive functions were much disordered. Saline sedative treatment, counter-irritation, and mild mercurial aperients, were first prescribed. Afterwards cod-liver oil and light nutritious diet were ordered, and he was then sent to Ireland for change of air. He returned in November, looking very stout and well, and having gained a stone in weight. His pulse, which had been 90, was then only 70, and he had scarcely any cough. A few large bubbles could still, however, be heard when he took a deep inspiration, and respiration beneath each clavicle was harsh. During the winter the patient fully maintained his ground, and almost altogether lost his cough. His health was so good that he did not lose a single day from his office. He persisted in the use of the oil, and in foggy weather he wore a respirator. On the 25th of November, 1852, he again consulted me, and stated that he had continued to take

cod-liver oil pretty regularly, but had left it off during the hot weather in summer. His health had kept very good until a month previous, when, not feeling so well, he resumed the use of the oil, but had found it not to agree with him so well as formerly. This was evidently owing to a deranged state of the digestive organs, admitting of being easily rectified. He had also some cough, and return of night perspirations. An examination of the chest showed that there was now a small cavity at the apex of the left lung, which was nearly dry. Mild alterative mercurial aperients were again employed to regulate the digestive functions; cod-liver oil was afterwards resumed, and counter-irritation used by an embrocation containing croton oil, chloroform, oil of bitter almonds, soap liniment, and rectified spirit. As the local disease showed a tendency to resume activity, though the general health was still good, and the patient had kept up his flesh and strength, I proposed that he should make arrangements to pass the winter in a warmer climate. The next time I saw him, he informed me of his intention to go out to Australia, a course I did not disapprove of, and he sailed on the 1st of January, 1853.

I afterwards heard from his friends that he had got so strong that he had gone to the diggings, but I have not heard recently of him.

Case 15.—A gentleman residing in Manchester, twenty-four years of age, rather short and muscular, occasionally consults me. Though he has a moderate-sized cavity at the very apex of the left lung, and there has been an amount of tubercular disease, which has left complete dulness on percussion, and entire absence of vesicular respiration in the infra-clavicular region, he has all the appearance of health, and attends regularly to his business, though he does not feel quite as strong as formerly. He was attacked with cough in April, 1852, in consequence of getting wet, and the usual symptoms of con-

sumption showed themselves. In the end of May he began to take cod-liver oil, after which some improvement first began to show itself. On the 16th of February, 1853, I examined him carefully; he had been taking a tablespoonful of cod-liver oil regularly twice a day, and was anxious to have a change in the treatment, as he found himself in a stationary position. He had scarcely any cough; but expectorated a few times in the day, especially after meals. The pulse was 94, he had no perspirations, and his strength was good; but after lifting something heavy, he had on two or three occasions seen a little blood in the expectoration. The tongue was clean, the appetite good, and the bowels regular. There was no sinking below the left clavicle; but the sound on percussion was very dull; there were no rales, but respiration was absent, and the sounds of the heart loudly transmitted to the ear. Over the scapular end of the clavicle all the signs of a moderate-sized cavity, almost dry, were perceived. Below the right clavicle the resonance of the cough was loud, and respiration was interrupted. Syrup of the iodide of iron was ordered to be taken with the oil, and iodide of lead ointment to be rubbed in below the left clavicle.

The great amount of consolidation indicated by the dulness and absence of respiration is the chief point of interest in this case. With the view of promoting absorption in such cases, I have used not only strong tincture of iodine, but also ointments with the iodides of mercury and lead, which may not be altogether devoid of power to promote absorption of even true tubercular deposits.

Case 16.—A gentleman, twenty-five years of age, came from the Isle of Man on the 24th of April, 1854, to consult me. He had cough, and was extremely weak, pale, emaciated, and dispirited. He had also an eruption of acne punctata on the face and front of the chest. He had likewise had an attack of hæmoptysis. There was

some dulness on percussion beneath the left clavicle, and the respiration in the same situation was feeble and harsh in character. He was put upon a tonic plan of treatment, with cod-liver oil and syrup of iodide of iron, and his health and strength improved surprisingly. From time to time he has come across to see me, and it was remarked that the expectoration diminished, and was latterly observed only in the morning. He was more than usually steady in persisting in the use of cod-liver oil, but occasionally left it off for a time, when some other tonic was substituted. When I last saw him in April, 1858, he had grown quite strong, and entirely free from cough or expectoration. The sound on percussion has never, however, become perfectly clear below the left clavicle, but the case is one of complete arrest of all the symptoms. The patient has entered into business, and there is good reason to hope that the suspension of the disease may be permanent, and recovery is, therefore, as nearly as possible perfect.

Case 17.—Miss M., aged twenty-four, a lady of scrofulous constitution, came from Shropshire in June, 1854, to place herself under my care. She was extremely pale, weak, and emaciated. She had been losing flesh rapidly since April, but her cough had become troublesome in February, though she dated the origin of it back to the previous summer. She had copious expectoration, and very severe hectic symptoms; the night perspirations were profuse, the pulse rapid, and the skin hot. A small scrofulous abscess on the right side of the neck had not entirely healed, and there was an enlarged gland below the left ear. Menstruation was copious. She had all the physical signs of tubercular deposit at the apex of the left lung undergoing softening. The dulness and moist crepitation were well marked. Cod-liver oil was prescribed along with nitro-muriatic acid, and, during the monthly periods, she was ordered to take ten grains of gallic acid three times a day. Under this plan of treat-

ment a great improvement soon took place. On the 29th of August she had grown stout. She had comparatively little cough or expectoration, no night perspirations, or other hectic symptoms, and the pulse only 82. The crepitation below the clavicle had become of a dry character.

Though there was a large amount of tubercular deposit, as well as external scrofulous disease, the health has been sustained in a remarkable manner in this case, which was looked upon, at the time she was first brought to me, as altogether a hopeless one; and when I last heard of this lady, about four years after I had first seen her, I was informed that she was very well, and had been married for some time.

Case 18.—A mill-owner, about thirty years of age, residing in one of the manufacturing towns of Lancashire, consulted me on the 29th November, 1853, and at intervals since then. He had been sight-seeing in Paris during the summer, and got chilled after being heated, and cough and expectoration then came on, and had never since left him. His mother had died of consumption after suffering from a scrofulous affection of one of the joints.

He was rather tall and thin, of dark sallow complexion. With his cough he had some expectoration in the morning. The pulse was 84, and he had no hectic symptoms. The tongue was slightly furred, and the bowels costive. The appetite was not good. The chest was flat and depressed below both clavicles, but especially the left. There was no well-marked dulness, but the voice and cough were louder below the right clavicle, and the respiration harsh and interrupted, and when he took a deep inspiration a single click was heard in one spot.

In this case there can be no doubt of the existence of a very limited deposit of tubercle at the apex of the right lung. The disease is, however, not only circumscribed, but also of a very chronic nature, not seriously affecting the health,

which has been sedulously attended to by the patient. The digestive functions were regulated by suitable means, and cod-liver oil was advantageously used for a considerable time along with different chalybeate and acid tonics; and the hygienic treatment embraced, amongst other means, cold sponging and friction of the chest and body. When I saw this gentleman in December, 1857, he was in very good health, and was almost entirely free from cough. He was also stouter and stronger than I had ever seen him. The clicking sound below the right clavicle was not perceived. In the beginning of March, 1859, he consulted me for a trifling ailment, but was then strong and free from cough and all pulmonary symptoms.

Case 19.—A young lady, sixteen years of age, was placed under my care on the 16th of March, 1855, having all the most advanced symptoms of consumption, as well as the physical signs of a cavity of considerable size at the top of the left lung. She had been in London at school, and had more than once returned from it in a delicate state of health, with some of the symptoms of mesenteric disease, but each time recovered when at home.

When placed under my care it would be impossible to conceive a case apparently more hopeless, and the physician, who had been consulted in London, gave no hope, and recommended that she should be brought home as speedily as possible.

She had severe pain in the bowels, tenderness on pressure, and severe diarrhœa. The tongue was red at the point, and she vomited frequently. There was thirst and hectic fever, the pulse ranging from 100 to 130, and the perspirations were very profuse. The cough was very troublesome, and accompanied with a considerable quantity of purulent expectoration. She was extremely emaciated, and so reduced in strength that for several weeks she could not stand, or even be removed from bed.

The physical signs were well marked, and indicated the existence of considerable deposit, and the formation of a cavity at the apex of the left lung. There was very decided sinking below the clavicle, almost perfect dulness, and gurgling, with the other signs indicating the existence of a cavity of considerable size; and these signs had not disappeared three years after, though there was less sign of fluid in the cavity. There were no signs of disease in other parts of the same or in the other lung.

My first object in treating the case was to stop the diarrhœa, which was accompanied with vomiting, complete loss of appetite, and extreme tenderness on pressure, the motions being of a thin feculent character, with spots of bloody mucus. For this purpose chalk mixture, with catechu and opium, was tried without effect, and it was finally checked, most effectually, by sulphate of copper, with creasote and opium. By degrees, I was enabled to get her to take teaspoonful doses of cod-liver oil, and gradually increased the dose, giving it along with quinine. A perceptible improvement began after this to show itself, but it was so slow that she could not walk till the middle of May. Citrate of iron was afterwards substituted for the quinine, and the improvement, though slow, was steady and progressive; and by the middle of June she was able to drive out in a carriage. On the 4th of July, she was removed to the country, where she rapidly gained flesh, strength, and colour. The physical signs, however, underwent very little change for a long period, and she was subject, the three subsequent winters, to attacks of cold in the chest, with increase of cough and expectoration. On such occasions, and from time to time by way of prevention, she has recurred to the use of cod-liver oil and other tonic remedies.

On the 9th of November, 1858, I made the following memorandum:—She is a stout, strong-looking girl, with

healthy colour. The flesh is firm, and she has every appearance of robust health. She can take long walks without fatigue. The catamenia have become quite regular. She has sometimes cough with trifling expectoration in the morning when she takes cold, and she has several times brought up hard, round, chalky bodies—cretaceous tubercles. None of the signs of a cavity can now be discovered, and the sinking of the upper part of the left side of the chest is scarcely observable. On the 1st of January, 1859, she was completely free from cough and expectoration. I again examined the chest, and found that though there was decided dulness, it was considerably diminished. The respiration was feeble, but not bronchial, and free from any rales. The voice, as heard through the stethoscope, was different in tone on the two sides. Posteriorly nothing was audible but some dry crumpling sound.

This was as severe and advanced a case as we could possibly meet with. It had every appearance of being a perfectly hopeless one, but the age of the patient was in her favour, and it was almost the only favourable point. The recovery of the patient has, however, been as complete as we ever see it, both as regards the general and the local disease; and the signs of a cavity having very gradually disappeared altogether, I think I am justified in believing that it has not merely contracted, but healed, and that we may therefore look upon this as a case where the disease is not only arrested but cured.

Remarks on previous Cases, with Summary of Results.—Of these nineteen cases there are fifteen of which an account has been already published; and one other, formerly published along with these, has been inserted in the first part of this chapter, at page 95. Two of them died after the disease had been arrested for a time, but I know from recent positive information that more than

half of them are now alive; and no doubt several of the others, of whom I have not lately heard.

In the *first* case the disease was in the early stage before any softening and disorganisation of the lung had occurred; recovery seemed to be complete, and the patient having continued well, there is good reason to expect that it may be permanent. In the *second*, a degree of dulness, indicating a very considerable amount of consolidation, was almost entirely removed, and the general health perfectly restored for nearly two years and a half; and as this occurred at an early period of life, when tubercular disease does not commonly attack the lungs, there is sufficient ground to believe that the judicious use of hygienic means, and prophylactic treatment may enable the child to outgrow the tubercular tendency altogether. In the *third*, the disease had not gone beyond the first stage; but remaining dulness showed that there was pulmonary induration, or partially absorbed tubercular matter, which may have undergone cretaceous transformation. In other respects, however, recovery has continued most perfect, and there is good reason now to believe that, with ordinary care on the part of the patient, it will prove permanent. In the *fourth*, the tubercular matter had probably become cretaceous, recovery was very good; and as the period of life of the patient — above fifty years of age — lessens the activity of the tubercular tendency, there is reason to expect that due care might at least prevent its renewal for an indefinite period. In the *fifth*, the disease was in the first stage; and a very perfect and continued recovery has been effected. The *sixth* was a case where the slow progress of the disease, and the fact of it being arrested in the first stage, were looked upon as grounds for hope; whilst on the other hand the natural delicacy of constitution was considered as a reason for fear, that slight exciting causes might rekindle the activity of the tubercular de-

posit, but so far it has been groundless. The *seventh* and *eighth* are cases where the amount of the tubercular deposit was small; and it is probable that it has been absorbed or become cretaceous. The health is so good in the eighth, that the recovery may now be reasonably looked upon as permanent. In the *ninth*, the disease had reached the second stage, but there was very perfect recovery, and some good ground therefore to hope that it would continue. In the *tenth* case, the disease had arrived at the third stage; but its extent was more limited than in most cases so far advanced, and the general health had never sunk to a low point. These circumstances, and the perfect restoration of the general health, with almost complete removal of the local signs, lead us to hope that the small cavity, if not already obliterated, might ultimately be completely healed. The fatal result in the *eleventh* case, where a good recovery of very considerable duration had been made, shows that there is uncertainty as to the result of all those cases where a cavity of any considerable size has once been known to exist, however perfectly the disease may seem to be arrested. The termination in the *twelfth* would lead to a similar observation; but in this case it is satisfactory to add that, though the original extent of the disease precluded any favourable anticipations; reparation was carried forward to a much greater extent than was expected, so that the disease did not prove fatal in the ordinary way by sinking, but by an accidental inflammatory complication. In the *thirteenth* and *fourteenth* cases it was hoped that, as the constitutional powers were good, the alterative influence of a complete change of climate might enable them to maintain the ascendency over the local disease,—a result which the good state of the general health in the *fifteenth* may possibly also effect, though the amount of dulness would give us cause to fear a renewal of the disease. In the *sixteenth*, there has been such per-

fect renovation of the general health, and cessation of cough, with return of aptitude for business, that recovery may be regarded as perfect, with every prospect of being permanent. In the *seventeenth*, restoration has been effected from an almost hopeless condition; but I should fear that with the constitutional tendency to the disease, strongly indicated by external scrofulous disease, as well as advanced internal tubercular affection, there would be a tendency at some future period to a renewal of the disease. The *eighteenth* case is one where we have a very limited deposit of tubercle of apparently very chronic nature, not in any way effecting the general health; and there is reason to expect that ordinary care and attention on the part of the patient will prevent it affecting the duration of his life. The *nineteenth* is one of the most interesting and encouraging cases that have come under my observation. It is an example of recovery to a vigorous state of health from the lowest degree of weakness, emaciation, and hectic fever, with severe diarrhœa, which teaches us that we should never abandon any case till remedial means have been fairly tried. It is also a case in which we have evidence of recovery being effected by absorption of tubercle, shown by gradual diminution of dulness; by cretaceous transformation proved by the expectoration; and by cicatrisation, rendered probable by the slow but complete removal of the signs of a cavity. That recovery may be permanent, is rendered highly probable, not only by the great improvement in the local signs, but by the vigorous state of health attained.

General observation of tubercular disease of the lungs, as well as the results in some of the previous cases, enable me to express with confidence the opinion that perfect recovery in the early stage may not unfrequently be permanent; that it may likewise be so in those advancing into the second stage when the extent of disease is

limited; but that in those in the third stage, where one or more cavities exist, perfect recovery is so rare that it can be permanent only in exceptional cases. It is, however, satisfactory to know that, though the ultimate result must in these cases be very generally unfavourable, the disease may often be suspended, and a fair amount of health enjoyed by the patient for an indefinite period of years.

CHAP. VII.

PREVENTIVE TREATMENT OF CONSUMPTION.

PREVENTABLE NATURE OF THE DISEASE SHOWN BY ITS RELATIVE PREVALENCE IN DIFFERENT CLASSES. — HYGIENIC RULES NECESSARY FROM INFANCY IN THOSE HEREDITARILY PREDISPOSED. — PURE AIR. — VENTILATION. — ACTIVITY OF RESPIRATORY FUNCTION. — BENEFICIAL INFLUENCE OF PERFECT OXYGENATION OF THE BLOOD. — EFFECT OF MOUNTAIN AIR. — CHOICE OF A PROFESSION IN THOSE PREDISPOSED. — HORSE EXERCISE. — GYMNASTIC EXERCISES. — RECOMMENDATIONS OF ARMY COMMISSIONERS FOR PREVENTION OF CONSUMPTION IN SOLDIERS. — CLIMATE AND CHANGE OF AIR. — AMOUNT OF CONSUMPTION IN DIFFERENT REGIONS OF THE GLOBE. — RELATIVE AMOUNT IN DIFFERENT PARTS OF ENGLAND. — DISTRICTS AND COUNTIES WHERE LEAST FREQUENT. — INLAND AND SEA-COAST CLIMATES. — SEA VOYAGES. — FACILITIES AFFORDED BY SCREW-STEAMERS TO MEDITERRANEAN AND OTHER PLACES. — REGULATION OF MENTAL AND BODILY FUNCTIONS. — THOSE OF THE SECRETING ORGANS. — REMEDIAL TONIC TREATMENT.

That consumption is a disease which almost all debilitating influences have more or less tendency to induce, is an important fact which has been kept prominently in view in the preceding pages. A due appreciation of this fact must also rest at the foundation of all our efforts to ward off the disease in those hereditarily predisposed, or who have shown any signs of pulmonary weakness; and most of the ordinary rules bearing on the preservation of the health may also be applied in relation to the prevention of consumption.

We have already shown the vast importance of this subject, and the wide field it presents for such sanitary improvements as would undoubtedly diminish the mortality from this disease,—from the facts that, in England, nearly sixty thousand persons die annually of consump-

tion; that the disease is far more prevalent in towns than in the country districts, among persons engaged in in-door or manufacturing employments than in the agricultural population; from the great fact, in short, that the disease is not only a very prevalent one, but that pulmonary diseases, of which it is the chief, are nearly three times as prevalent in the most unhealthy districts as they are in the most healthy parts of the country. We have also seen, in regard to soldiers, that consumption is nearly three times as common as it ought to be, and that it is also induced, though to a less extent, among persons following other occupations by removable causes,—from which it is an unavoidable conclusion, that the disease may be prevented to a vast extent.

It has been observed that there is no disease, the hereditary nature of which is more clearly proved than that of consumption, and, therefore, it has been judiciously recommended by Sir James Clark, that where this predisposition exists in a high degree, the preventive treatment should be carried out from infancy. When the mother is unable to suckle her infant, a substitute should be procured, and, during this period, as well as that of childhood, the utmost attention should be paid to those hygienic means which promote the healthful development of the frame, by regulation of the diet, and attention to clothing, cleanliness, exercise in the open air, and sleeping in a well-ventilated apartment, which should not be overcrowded, as is too often the case in boarding-schools and other institutions.

Early manhood and womanhood are periods at which the tendency to the disease is increased, and when, therefore, additional attention should not only be paid to such hygienic rules, but the bodily and mental powers should not be overtaxed.

The preventive treatment of consumption must necessarily consist in a great part in the removal of the patient

from the operation of the causes pointed out in the second chapter, and in subjecting the individual to those influences, medicinal, hygienic, and climatic, known to be efficacious in improving health and constitutional vigour. Some of the means which we would recommend for the prevention are applicable also in the treatment of actual disease. But from experience in many cases, I can affirm that when consulted at an early period with a view to the prevention of consumption, I have found myself placed in a far more pleasant and a more favourable position for attaining this object than when deposit has actually begun to form in the lungs, for we have then a double disease to contend with—a local as well as a constitutional one—and it unfortunately happens that some of the means which are beneficial as regards the latter are injurious to the former, and can never be as effectually carried out after tubercle has actually formed in the lungs.

Pure Air, Ventilation, Activity of Respiratory Function.—That an inactive or imperfect performance of the functions of the lungs is one of the main causes of tubercular disease of these organs is proved by the combined evidence of many facts already noticed. The function they perform in exposing the blood to the action of the air, by means of which it is purified by the excretion of carbonic acid and water, and vivified by absorption of oxygen, is one of the most vital and important of any; and wholesome nutritious food is not more necessary for the maintenance of health than is the respiration of pure air. We cannot survive the total deprivation of air for many seconds, and when obliged to breathe the impure air of crowded rooms, we feel an oppression and languor which does not arise so much from the heat as from the impediment to the function of respiration. The immediate relief felt on getting into fresh air causes us to disregard it, but the injurious effects are often experienced the next day by delicate persons; and the habitual repetition of

it, to which some are exposed from their employment or mode of living, tends surely, and with more or less force, according to individual strength or weakness of constitution, to the production of tubercular disease of the lungs. Muscular exercise, which promotes activity of the circulation and exposure of the blood to the action of the atmosphere, tends in some measure to counteract the injurious influence of impure air; but, when the function of the lungs is impaired by an impure atmosphere and muscular inactivity, two of the most powerful causes are brought into combined operation, — causes which act by inducing the constitutional as well as the local tendency to the disease. As an illustration of the counteracting effect of muscular exercise, I may cite the facts given by Dr. Guy, with respect to printers. He found that in the close workshops of a printing establishment, the compositors, whose employment is sedentary, fell victims to consumption in the proportion of 44 per cent. to 31½ of the pressmen, who, although breathing the same air, and in other respects subject to the same habits of life, differ only in the active bodily exercise of the press.

The immense importance of pure air and ventilation in the prevention of consumption and scrofula was long ago insisted on by Sir James Clarke, who illustrated it in a striking manner, by the following instance of its effects on the health of children:—"In a school at Norwood, containing 600 boys, scrofula prevailed extensively, and great mortality had occurred, which was ascribed to bad and insufficient food. Dr. Arnott, who was called to investigate the cause of the disease and mortality, found the food good and sufficient, but the ventilation extremely defective. Ventilation was properly applied, and the scrofula speedily disappeared. Eleven hundred children are now maintained in health in the same space where 600, before a regular system of ventilation was adopted, were scrofulous and weakly." He has also quoted the

opinion of M. Beaudelocque, who considered the respiration of impure air as the essential cause of scrofula.

Though we see, therefore, that this important cause has not been overlooked, it has never been as profoundly appreciated as it ought, and I may therefore briefly recall attention to some of the facts already brought forward in relation to the causes of consumption, which prove the importance of pure air, ventilation, and out-door exercise. We have seen that the mortality from consumption among the women of England is in the proportion of 26,000 to 23,000 of the men, a disproportion due not to peculiarity of sex, but to the more sedentary habits and occupations of women; also, by a comparison between eight urban and eight rural districts, that pulmonary diseases are more prevalent in the former than in the latter, in the proportion of 811 to 322 (per 100,000), impurity of the atmosphere, defective ventilation in houses and factories, and insufficient muscular exertion, being the chief unfavourable influences causing this excess in the urban population; and that there is a greater amount of mortality from pulmonary consumption amongst soldiers than there is in the general population of the country from all other diseases together, this being owing chiefly to the breathing of impure air in the barracks and defective ventilation in the dormitories; whilst on the other hand, we have seen that the agricultural labourer, who has the greatest amount and variety of exercise in the open air, is the longest lived of all classes of the community, and though not the best fed, clothed, or housed, is nevertheless the least liable to be attacked with consumption.

Lehmann has asserted that there are no acute, and but few chronic, diseases in which there is not deficient oxygenation; and if we consider how much of our treatment, in most diseases, consists in removing unhealthy secretions, most of which would not exist at all if the function of respiration were vigorously performed, we have much

reason to believe that there is a great amount of truth in this view. It can be clearly shown to be true of gout, where deficient oxidation prevents the conversion of uric acid into urea, and also of some other diseases. I am strongly disposed to think that imperfect performance of the function of respiration, (I will not call it deficient oxidation, as that completing part of the process of digestion by which the chyle is converted into true blood, consists of excretion as well as absorption,) is one of the great causes of tubercular formations, which are more frequently deposited in these organs than in any other part of the body. We should likewise observe that tubercle is most apt to be deposited in the apices, the most inactive parts, and that in proportion as the breathing power is impaired by the disease, the tendency to further deposit is increased, so that the difficulty the physician has in combating the disease is continually increasing with its advance. Hence, too, the fact that tubercular disease affecting the lungs is not only more common but less curable than when it occurs in any other organ.

In connection with the importance of pure air and ventilation in the prevention of consumption, I would draw attention to the interesting fact that the purity and rarefaction of the air in mountainous regions tend to prevent consumption by giving greater development to the lungs and respiratory function. From this we would infer that pure air must act rather by promoting the excreting function of the lungs than by increasing oxidation,—a view taken also by the reviewer of Dr. Mühry's work on Climatology*, who observes:—"The occurrence of phthisis diminishes with the atmospheric pressure in vertical elevations. We shall scarcely err in attributing this to the greatly increased rarefaction of the air. It does not appear that the formation of tubercle in the system in

* Brit. and For. Med.-Chirurg. Review, Jan. 1859, p. 62.

general diminishes and ceases on lofty mountains; but it does appear that on account of the rarefied state of the atmosphere with diminished pressure, and an absolutely diminished amount of oxygen, the formation of tubercle is impeded in the lungs, a situation in which it is peculiarly liable to occur. This may depend either on the diminished quantity of oxygen, which at the height of 12,000 feet is less by more than one-fourth, or it may be caused merely mechanically by the extension of the act of inspiration thus rendered necessary, with greater dilatation of the thorax and bronchi. We agree with Dr. Mühry that the latter is the more probable cause of the exemption alluded to." In mountaineers, it may also be observed, the chest is generally well expanded and fully developed. Dr. A. Smith* has published some very important facts in regard to the influence of the climate of Peru on pulmonary consumption, which show likewise that the rarefaction of an elevated mountain climate is beneficial in those actually attacked with consumption. It would seem that consumption is very common in the warm humid climate of Lima and along the coast, commencing very frequently with hæmoptysis, but that it is almost unknown in the mountainous regions and valleys of the Andes. He has given an account of several places on both sides of the Cordilleras, elevated from eight to ten thousand feet above the level of the sea, which are very favourable for recovery, and which are much resorted to by the people of Lima. One of these is "Huarriaca," which he says, "is in climate very like Obrajillo, on the western slope of the Andes, and is one of those recesses in the Andine glens and defiles very productive in maize, corn or wheat, potatoes, beans, and natural pastures on the heights, as well as cultivated lucern on the straths. Such, indeed, are the marked localities, blessed with a

* On the Climate of Peru. Brit. and For. Med.-Chirurg. Review, vol. xviii.

steady temperate climate, and a dry air of about 60° Fahr., as well as sunny, cheerful sky, throughout the greater part of the year. Such are the localities where phthisis proper, or tubercular disease of the lungs, is only known as an exotic."

The practical deductions that may be drawn from the preceding facts in relation to air, ventilation, exercise, and activity of the pulmonary functions, are of so self-evident a nature that they may be disposed of very briefly.

As regards the choice of a profession, they show clearly that for a youth predisposed to consumption the chance of warding off the disease will be greatly improved by choosing an active one which will give him an opportunity of living in the country, and having much out-door exercise, instead of being confined many hours a day at a desk, or being engaged in studious or literary work.

I would recommend all persons, and especially those showing any tendency to consumption, to inhabit airy, lofty, and properly ventilated rooms. I have often been surprised to see how little attention mercantile men pay to the light, ventilation, and comfort of the offices in which they and their clerks pass so large a portion of their lives. Pure air and light are stimulants which invigorate the mind as well as the body, and the want of them causes vegetable as well as animal life to languish, the former being blanched, and the latter rendered pale and anæmic. It is a well-known fact, too, that the tadpole does not undergo the usual transformation and progressive development when removed from the influence of light.

Exercise on horseback has always been considered beneficial to those who have shown any pulmonary weakness, and there can be no doubt that it is of use in many cases; but I believe that for the purpose of preventing the disease, such moderate gymnastic exercises as bring into action the muscles of the arms, and develope those of the chest, and at the same time cause deep inspirations, are the

most beneficial. A public play-ground, furnished at the private expense of a philanthropic gentleman, has been opened for the use of the lower classes of Liverpool. The crowds that resort to it in summer, in order to avail themselves of the means it affords of obtaining healthful muscular recreation, show that the boon is one which is fully appreciated; and I do not hesitate in expressing the conviction that it must exercise a powerful influence in preventing pulmonary disease. If public parks, with play grounds for exercise, were more common in the vicinity of our large towns, they would have a powerful effect in diminishing the amount of consumption; and I may here observe, that the Commissioners appointed to examine into the condition of the army not only recommended that additional barrack room should be provided, so that each man might have a minimum of 600 cubic feet allotted to him, but also that, as in the French army, gymnastic exercises should be introduced, and that "facilities and encouragement be given for all athletic games, such as fives, cricket, quoits, and for gymnastic exercises, &c., and that the men be employed on different kinds of labour when possible."

Climate and Change of Air.—Change of air and climate are means of acknowledged power in the treatment of consumption, and perhaps there is no disease over which these agencies exercise a greater influence. Notwithstanding all that has been written, however, on this subject, with so much appearance of exactness, there is still a great want of definite and precise facts. It would carry me beyond the practical scope of this work to enter at length into this subject; but yet it is one of too great importance to be lightly passed over in treating of the prevention of consumption.

Change of air from town to country, as well as from one part of the country to another, are means of treating actually existing disease, of which medical men are con-

stantly availing themselves, and from which they derive great assistance; but, though the differences in the habits, occupations, and mode of life of the urban and country populations have no doubt a greater influence on the mortality from consumption than any difference in the climate within the limited range of this country, there are facts in regard to the climate of England, as well as that of the different regions of the globe, which prove that change of air, as well as climate, are agents which may be used with great effect in the prevention of consumption. I would observe, however, that there is no greater popular error than the common belief that consumption is caused chiefly by cold, and is most common in such variable climates as ours. This has lead to another equally great error that removal to a warm climate must be a means of preventing and curing the disease. Removal to a warmer climate in winter, and especially to a more equable one, such, for example, as Madeira, has undoubtedly a soothing influence on the lungs where disease actually exists, and is often beneficial, especially by enabling the patient to take exercise and to be more in the open air; but where there is yet no local disease it is doubtful if there be any European climate more likely to prevent its occurrence than a healthy part of England, and if there be any, we have quite as much reason to believe in the prophylactic influence of a colder and more bracing, as in one of a warmer description.

In illustration of these observations, we may refer to some facts with reference to the amount of consumption which prevails in some countries and regions of the globe. Though they cannot be of the accurate and reliable nature of those drawn from the statistics of the Registrar-General of England, they appear to be sufficiently well ascertained.

It would appear that in Iceland and the northern parts of the temperate zone, Sweden, Norway, and Lapland,

consumption is rare — a fact which would seem to show that mere coldness of climate is not one of the chief causes of consumption.

Within the tropics, again, it has been found that there are places where it is rare, as, for example, the East Indies, whereas it is a very common disease amongst our soldiers in the West Indies. Mere heat is not therefore a chief cause any more than mere cold, and there are other influences, as we have already seen, more powerful than either.

In the highest and lowest latitudes of the temperate zones the disease is comparatively rare; but Ancell says that in the central regions north of the equator, including England, France, Germany, Spain, Portugal, Italy, the northern shores and Archipelago of the Mediterranean; and the sections of India, China, and North America included in this range, it is the most universal cause of the deterioration of the human species, and of premature decay and death, although varying greatly in degree in different countries and localities.

On the other hand, it is known that there are parts of the temperate zone, more particularly Syria, Upper Egypt, and Algiers, where consumption is very rare. Dr. Mitchell states that the deaths from consumption in all classes of the population of Algeria in only 1 in 27·6 of the deaths from all causes, the proportion in London being more than three times as great, or about 1 in 8.

In the southern temperate zone, embracing the Cape of Good Hope, Australia, and part of South America, which are known to be healthy climates, consumption is also comparatively rare.

With reference to the comparative frequence of the disease in different parts of England, we have already shown that the crowding of the people in towns, and their habits and mode of life, are more powerful in causing the differences that exist in this country than any comparatively

trifling variety of climate. Leaving it, however, for the present undecided how far such difference may be due to variety of climate, it is interesting to know that there are parts of England much freer from pulmonary disease than others.

Dr. Greenhow has informed us that Glendale and Rothbury are the healthiest districts, and those in which there is the smallest amount of pulmonary disease, the deaths in Glendale being only 216 per 100,000 of the population. They are rural districts of elevated position, surrounded by ranges of hills, amidst streams; which, by their confluence, form the rivers Aln, Coquet, and Till. Fifty-seven per cent. of the men of Glendale, he tells us, are engaged in agricultural or pastoral pursuits, and the remainder in occupations that minister to the wants and comforts of the scattered gentry, and an agricultural population. The district is so thinly peopled that there are ten acres to each inhabitant, and no considerable town; and in Rothbury, which is even more remote from the busy hum of cities, the people are so thinly sprinkled on the face of the land that there is, on an average, only one inhabitant for every twenty-one and a half acres. The geological structure which exercises so much influence on the vegetation of different districts must also affect the inhabitants, as it must act powerfully in regard to the quality of the water used for drinking purposes, as well as upon the temperature and moisture of the atmosphere. The subject has not yet, however, been statistically examined, though well worthy of investigation. In connection with the healthiness of these districts it is interesting to note that the geological structure is carboniferous limestone.

Bootle, in Cumberland, is another healthy district, where the pulmonary death-rate is only 304 per 100,000; and with reference to this, and the previously mentioned districts, Dr. Greenhow makes the following remarks, tending to show that mere mildness of climate does not prevent

consumption, though it may be used as a valuable auxiliary in the treatment. "The most remarkable fact," he observes, "in the table is the very much smaller mortality of Glendale, in Northumberland, and of Bootle, in Cumberland, than of even the healthiest places in the south of England,—a peculiarity which is not confined to these agricultural places, but is also observed in Haltwhistle, Easington, and Houghton-le-spring, the inhabitants of the former of which places are partially, and of the two latter extensively, employed in coal-mining. The facts are too few to admit of any general inference, but they at least prove that the colder and more variable climate of that narrow part of the island that intervenes between the Solway Firth and the North Sea is not unfavourable to health, and that cold alone is less causative of pulmonary disease than is commonly supposed."

It has been already pointed out that the northern counties division, in which these districts are comprised, is not only the healthiest registration division, but also the freest from pulmonary disease. From an examination I made some years ago into the Registrar-General's returns for the year 1849, I found that in that year there was one death from consumption in 352 of the whole population of England and Wales, and the following were the counties in which I found that there were the fewest deaths from phthisis to the population:—

Devonshire	1	death from phthisis in		484
North Riding of Yorkshire	1	„	„	453
Somersetshire	1	„	„	437
Lincolnshire	1	„	„	431
Worcestershire	1	„	„	430
Durham	1	„	„	430
Northumberland	1	„	„	426
Cumberland	1	„	„	410

We see, therefore, that though Glendale is the healthiest district, when we embrace whole counties Devonshire is

found to be peculiarly free from pulmonary consumption, and though the mortality must be increased by its being so much resorted to by consumptive invalids, we see that it is still lower than that of any other county, so that there must be some foundation for the commonly received opinion as to the beneficial influence of its climate in this disease.

I would here observe, with reference to the town of Liverpool*, which Dr. Greenhow has unfairly stigmatised

* "In the course of last year two reports were published under the sanction of Government boards, containing statements calculated — unintentionally, no doubt — to throw discredit upon Liverpool, and the efforts made for its sanitary improvement. The first of these is by Dr. Greenhow, of London, in a blue book of the General Board of Health, entitled, 'Papers relating to the Sanitary State of the People of England.' It might be sufficient with regard to this, to state (as already ably pointed out by Mr. M'Gowan, in his paper on 'Sanitary Legislation,') that two fallacies run throughout the report, which entirely vitiate all his conclusions affecting Liverpool. In the first place, Dr. Greenhow takes the mortality of a *portion* of the borough, and that the most unhealthy portion, and represents it as the mortality of 'Liverpool;' entirely omitting from his calculations the more healthy districts, containing at that time about one-third of the borough population. Secondly, having taken the most unhealthy district of the borough, he next selects a most unhealthy period, within which he confines his calculations of mortality — a period of six years (1849–54), the first and last of which were signalised by visitations of epidemic cholera, increasing the mortality of Liverpool in those two years alone by upwards of 7000 deaths. The results obtained by this process are then contrasted with those afforded by the most healthy rural district in England — Glendale — a remote region of Northumberland, bordering upon Scotland, having the winds of the German Ocean sweeping over it on one side, and on the other the invigorating breezes of the Cheviot Hills. The unfairness of such a comparison is self-evident. On the one hand, Liverpool — built up in great measure before sanitary requirements were dreamt of, suffering from all the evils inseparable from a crowded population of 74,000 to the square mile, with a greater amount of pauperism, and a larger proportion of the inhabitants at those early ages which invariably yield the highest rate of mortality. On the other hand, Glendale — such as has been described, and with its population thinly scattered over its surface, in the ratio of one indi-

as the most unhealthy town in England, that he has fallen into one of those errors which those not personally acquainted with particular localities must necessarily be liable to, and the possibility of which occurring has been alluded to by Mr. Simon in his introduction to the paper. His error has arisen from two chief causes: from his calculations being made from returns that do not embrace the whole of the borough, but exclude the suburban and most healthy parts, and from their being made for an unhealthy period ending in 1854, instead of being brought down to the time at which he wrote his remarks, which would have embraced a period when a great diminution in the mortality had been effected by sanitary improvements. Mr. M'Gowan has pointed out these sources of error, and has also shown that though Liverpool, as a seaport for emigrants, labours under many causes of a high rate of mortality, which do not affect the health of the inhabitants, it has actually improved so much in consequence of sanitary changes that it may be taken as one of the best examples of what may thus be effected, and no longer occupies the lowest place, but stands above Glasgow and Manchester.

Deaths in 10,000 being:—

	1846.	1857.
Manchester . .	371	322
Liverpool . . .	384	299

I have also been favoured by Dr. Duncan with some statistics which show further that Liverpool presents a

vidual to every ten acres of ground! Dr. Greenhow's report may be dismissed from further consideration, after stating that the mortality from all causes in Liverpool last year — high as it was — was 2000 less, and that from zymotic diseases nearly 1300 less, than would have been the case had his data been correct. It is only just to Dr. Greenhow to state that there is no intention to impute to him any wilful misstatement of the case, his error having arisen from want of local knowledge; but it illustrates the danger of any individual, however talented, sitting in judgment — at a distance — upon facts with which he is imperfectly acquainted." — *Dr. Duncan's Annual Report for* 1858.

remarkable example of what may be effected in the prevention of consumption by sanitary improvements in the condition of towns.

Deaths from phthisis in the borough of Liverpool :—

Three Years.	Deaths.	To Population yearly.
* 1838–40	4820	1 in 170
† 1847–49	4157	„ 252
1856–58	4571	„ 284

As we are often asked to recommend some particular place and climate, I may still make a few further remarks on this subject; and I would observe, in reference to an inland or sea-side climate, that my experience would lead me to believe that the sea-coast is generally beneficial, and it is well known that scrofulous diseases are often remarkably benefited by a summer residence at the sea-side. We know, too, that a sea voyage often proves a most effective means of warding off pulmonary consumption; but for those who are sufficiently strong to bear the excitement of travelling on the Continent, the new impressions thus produced would probably have an equally beneficial effect. It is impossible, however, to lay down any general rules, as there are many circumstances in individual cases requiring to be taken into consideration in deciding such matters. To those wishing to remove to a healthy part of the South of England, I need scarcely mention Torquay, the various places in North and South Devon, Bournemouth, St. Leonards, and the Isle of Wight. In summer and autumn any dry elevated part of England may be selected. The Malvern Hills may be mentioned as suitable; and there are several places in North Wales, on the line of railway to Bangor and Carnarvon. Llandudno, which is built on a limestone soil, close to the Great Ormeshead, embracing sea and mountain air, has,

* The Registration Act came into operation in the middle of 1837.

† The Liverpool Improvement Act in 1842, and the Sanitary Act in 1847.

within a very recent period, become a favourite sea-bathing place. Though a gentleman, formerly a patient of mine, who has long suffered from pulmonary disease, has derived great benefit from a permanent residence there, and speaks in the highest terms of the climate, I believe that, with the exception of the part close to the side of the mountain, it is too much exposed to the winds which sweep across from the two bays, and is not, therefore, well suited for those in whom pulmonary disease has developed itself, though it may be resorted to with advantage on account of its bracing sea and mountain air, by those predisposed, but in whom local disease has not yet developed itself.

Southport* is a watering-place much resorted to by the inhabitants of Liverpool, Manchester, and the manufacturing towns. I have seen so many cases in which its dry and mild climate has proved beneficial to pulmonary invalids, in the beginning of summer and the end of autumn more especially, that I frequently recommend it at those seasons. It is too warm, however, in the middle of summer, and being without shelter and devoid of any natural beauty, it affords none of those enlivening mental adjuncts which contribute so much in some other places to the mere atmospheric advantages.

The village of Clapham, at the foot of Ingleborough, is situated in a northern part of Yorkshire, which has been shown to be one of the parts of England where consumption is least prevalent. It is in a dry open situation on limestone, and I have no doubt it would in summer be found an eligible situation for an invalid to pass some time.

We have seen that mountain climates are beneficial, and Grasmere, and other parts in the lake district, might

* See Baron, on Southport as a Residence in Health and Disease. 1858.

suit well as a temporary residence in the middle of summer; but too much rain falls, and owing to this, as well as the nature of the geological formation, the climate wants the dry and warm character which is found on the sandy and porous soils of those newer geological formations where sandstone and limestone exist; and, therefore, notwithstanding the favourable account of the climate of the lake district, given by Dr. Davy, I should not think it a desirable climate for those disposed to consumption, except during the warmest and dryest time of the year.

There can be no doubt that in England there are many dry healthy spots, known only to those residing in their vicinity, which would be found as suitable for the residence of pulmonary invalids, and those predisposed to consumption, as many of the places on the Continent which are resorted to, and I think it would be well if medical men who are aware of such favourable localities would make their advantages generally known, as I may remark has been done by Dr. James Williams, with respect to the topography and climate of Aspley Guise.

The increasing number of screw-steamers which now ply to all parts of the world, give new facilities for sea voyages and complete change of climate to those who from any cause feel the general health impaired, and also to those actually suffering from pulmonary weakness. The steamers to the Mediterranean, which touch at many interesting places, give to the invalid the opportunity of visiting Beyrout in Syria, Egypt, and Algiers, which are amongst the best climates, and afford new facilities for change, of which I have availed myself in sending several persons to these places, that they might escape the cold winds of the spring months. Malaga is another place having a good climate, and it may be easily reached by diverging from this line at Gibraltar. Madeira has a more equable climate than any of these places, and it is pro-

bably better suited than any of them for those in whom the disease has made considerable progress, or who have much bronchial irritation. A patient who passed the winter of 1857-58 in Malaga, writes to me on the 21st February, 1859, from Madeira, that the climate is everything that could be wished, that the climate of the former cannot be compared to the latter, and that the accommodations and comforts are very superior in Madeira.

To those who desire a longer voyage and the most complete change of climate that can be obtained, the Cape of Good Hope and Australia are open for selection, as well as Monte Video and Buenos Ayres.

It is very important that due attention should be paid to the regulation of the mental as well as all the bodily functions. The mind should, if possible, be engaged in some cheerful mental occupation, for we have seen how much influence may be attributed in the production of this disease among soldiers to the listless life they spend, and among criminals to the mental depression they suffer. Medical men who have seen much of this disease, cannot fail to have observed the good effect of pleasant mental occupation, and of hope, in improving the health of those suffering from tubercular affections of the lungs.

The diet of those predisposed to consumption should be light, nutritious, and varied. It should embrace a due proportion of animal food as well as fermented liquors. The selection of wine, ale, or porter should be made, according to the digestive power of the individual, and his constitution and temperament.

In regulating the bodily functions, it is especially necessary to attend to the secreting organs, by means of which the blood is maintained in a pure and healthy condition. The lungs, the skin, the kidneys, the liver and bowels, and in females the uterus, are the great excreting organs,

on the due performance of the functions of which the health is much dependent.

Having already shown how great is the advantage to be derived from attention to air, exercise, and ventilation, the chief means by which we can endeavour to promote the pulmonary excreting functions, we would observe with reference to the functions of the skin, that they should be maintained in an active condition, by proper clothing with flannel next the skin. It is, however, at all times a matter of primary consequence, that the free movements of the chest should not be impeded by tight fitting garments or stays, which are, no doubt, one of the causes of consumption being more common in females. The skin, liver, and kidneys, remove not only fluid, but also solid particles. They are the depurating organs which purify the blood, by removing from it the products of the worn-out tissues, and a healthy activity on their part tends to prevent consumption, and should therefore be promoted by appropriate means. Habits of cleanliness are therefore very important, and with the view of fulfiling this object still farther in reference to the skin, and of preventing catarrhal irritation, I believe there is no means so effectual as tepid, or cold bathing, or spunging of the whole surface, followed by friction, which excites the depurating function of the skin, fortifies it against the impression of cold, and acts as a general tonic. Cold bathing and spunging may also be used with advantage in some cases where tubercles have been deposited, and I have seen some in which the cold water treatment had been carried out for a time with benefit. I believe too that the hygienic treatment pursued in some of these institutions is well calculated to act as a prophylactic against this disease; but it is to be regretted that some of these institutions are under the direction of men who carry

such treatment beyond due bounds, and favour homœopathic and other popular delusions.

With reference to medicinal means, I shall here only observe, that many of those which will be mentioned in the succeeding chapter on the treatment of the disease, more especially the tonic class, embracing the preparations of iron, quinine, and cod-liver oil, are likewise to be used for the purpose of preventing consumption.

CHAP. VIII.

TREATMENT OF CONSUMPTION.

MOTIVES FOR ATTEMPTING CURATIVE TREATMENT. — TREATMENT OF THE CONSTITUTIONAL DISEASE. — MEDICINAL MEANS. — ACIDS, HYDROCHLORIC, NITRIC, LACTIC, ETC. — CHALYBEATE TONICS. — EFFECTS OF SOME PREPARATIONS OF IRON. — QUININE. — COD-LIVER OIL. — ITS EFFECTS. — MODE OF ADMINISTERING THE OIL. — CONDITIONS OPPOSED TO ITS CURATIVE ACTION. — EXTERNAL USE OF OILS BY INUNCTION. — ACTION OF COD-LIVER OIL. — DIETETIC TREATMENT. — SUGAR OF MILK, THE WHEY-CURE. — TREATMENT OF THE LOCAL DISEASE AND ITS SYMPTOMS. — OF COUGH. — EMPLOYMENT OF COUNTER-IRRITANTS. — EFFECTS OF CREOSOTE. — PYROXYLIC SPIRIT, AND ACETIC ÆTHER IN CHECKING PROFUSE EXPECTORATION. — INHALATIONS. — IODIDE OF ÆTHYLE. — TREATMENT OF PAIN, OF SPITTING OF BLOOD. — ASTRINGENT REMEDIES. — TREATMENT OF HECTIC FEVER. — OF PERSPIRATIONS. — OF DYSPEPSIA AND VOMITING. — OF DIARRHŒA. — OF BRONCHITIS. — PNEUMONIA AND PLEURISY. — OF THE ACUTE VARIETY OF PHTHISIS. — CASE. — OF LARYNGEAL PHTHISIS. — OF THE VARIETY WITH FETOR OF THE EXPECTORATION.

It is impossible for any one who has followed out the preceding inquiries into the causes and prevention of consumption, to resist the conviction that the disease is much more under the influence of medical art than was at one time believed possible. When we consider also the early and vigorous period of life when consumption most frequently occurs, and when we observe too that it has nothing of the malignant character of some diseases, but that, on the other hand, the constitution only sinks, as it were, under its own natural efforts to free itself of the disease, we must all necessarily feel most unwilling to abandon the unfortunate sufferers as incurable; and it is surely our duty, seeing there are so many facts now proved

in reference to curability, to use every effort to save our patients, even though we know that in a large proportion of cases we must still contend with the disease without ultimate success. It is not surprising that the ingenuity of medical men should have been almost constantly exerted in the search of new remedies for such a disease. Some of those now almost laid aside may have owed a temporary reputation to their power of alleviating some distressing symptom, or may even have assisted materially in the cure of a disease, from which recovery has sometimes occurred by an effort of nature. In attempting curative treatment, however, we must look beyond any mere remedy, though in cod-liver oil we undoubtedly possess one of great power, which has maintained its reputation; and we must by a well-devised plan of treatment, perseveringly carried out, direct our main efforts to the removal of the constitutional disease, without which we can never hope to produce any lasting impression on the local disease.

It has been already remarked that in the treatment of consumption, most medical men formerly limited themselves to two objects—the prevention of the disease, and the palliating of severe and distressing symptoms; but that the attainment of a new object, the suspension, or arrest, of the disease is also now invariably sought to be accomplished. In examining the indications for curative treatment, to which our previous inquiries have naturally led us, it is scarcely necessary to observe that they are the same by which we may hope to attain the less perfect object of temporary cure—suspension, or arrest, and in failing to attain the higher object we shall not be the less likely to accomplish the inferior one. I have shown from pathological investigations that when the constitutional disease can be removed, there are certain objects, as regards the local disease, which we may endeavour, with a fair prospect of success, to attain, and that, as nature

unaided does the work in a few instances, it becomes the physician to inquire how he may most effectively render the assistance of art. "Homo naturæ minister et interpres tantum facit et intelligit quantum de naturæ ordine re vel mente observaverit, nec amplius scit aut potest." It was formerly too common for medical men, after having discovered the nature of a case, to fix their attention on an inevitably fatal termination, and to follow a certain routine practice, without ever proposing to themselves any curative object. Many were, and some are still, too sceptical to be readily brought to believe in the curability, but I may hope that the facts which have been adduced, pathological as well as practical, will at least cause any who may still be so to examine the subject anew. As long as consumption was regarded as absolutely incurable, it could not be hoped that there would be persevering and close observation of the effects of treatment, for it could not be supposed that those who did not see a reasonable prospect of arresting the progress of a disease, would exert their talents and energies in the accomplishment of such an object.

Treatment of the constitutional disease.—We have seen that the state of the constitution which causes the deposit of tubercle, is one of debility, with imperfect performance of the nutritive functions, which prevents the formation of blood of a perfectly pure and healthy character, and that with this state of the blood and constitution there is a liability to the escape into the tissue of the lungs of exudation matter of imperfectly organised or tubercular nature. The nutritive functions by which the blood is elaborated from the food consists of three chief successive processes: its solution in the stomach by means of the gastric juice, which is almost wholly chemical; next its absorption and formation into chyle in the lacteal and glandular system; and, lastly, its transformation from chyle into blood, which is effected in the lungs through

the influence of the oxygen of the atmosphere during respiration. In pulmonary consumption all these parts or processes in the nutritive functions are, no doubt, more or less deranged; but, though we have seen that innutritious food is one of the causes of consumption, we have likewise seen that impure air, deficient exercise, mental depression and confinement, are still more efficient agents in its production; and, as they would seem to act chiefly in impeding the last part of the process, there would appear to be good foundation for the observation made by Dr. Prout, that in struma, all the assimilating processes are at fault, but chiefly those which take place between the duodenum and the circulating system, and by which the chyle is converted into blood.

We have in the previous chapter on preventive treatment, pointed out the great importance of perfect oxigenation of the blood, by means of an abundant supply of pure air, which is necessary as regards nutrition, both for the construction of new tissues, and for the elimination of those that are worn out.

It should also be observed that the fundamental laws of hygiene are all subservient to perfect nutrition, and that therefore all those rules which have been there laid down, relating to diet, exercise, clothing, mental occupation, and change of air and climate, are applicable in the treatment of the constitutional affection, with those limitations rendered necessary in each case by the local disease in the lungs and its attendant symptoms.

In referring, however, to such limitations as may be rendered necessary by the cough and other pulmonary symptoms, I would caution medical men against the erroneous practice, now, however, less frequently adopted, of confining patients in warm close rooms. We have already seen that confinement and want of pure air and exercise are amongst the chief causes of consumption, and whilst such treatment may lessen the cough and local

symptoms, the temporary benefit thus gained may be acquired at the expense of more permanent constitutional injury, and should therefore be resorted to most reluctantly as long as there is any prospect of arresting the progress of the disease. I have so often seen permanent injury done by the confinement treatment, that I would rather run the risk of inducing some local irritation, than of augmenting the constitutional disease; but we are often placed in a strait, and of two evils must choose the least, seeing that local irritation and congestion tend, as well as the constitutional affection, to increase tubercular deposition; and therefore much judgment and practical experience are necessary, in order to discern how far the treatment should be directed, with the view of carrying out either of these two indications.

The selection of a suitable climate for those affected with more or less tubercular disease, is so extensive a subject, that it could scarcely be briefly touched upon with advantage. I shall only, therefore, observe that the change to more distant places is adapted chiefly to those in whom tubercular disease is in an early stage, or very perfectly arrested, and that most of the advantages of change may be more safely attained by more delicate invalids, in removing from one part of this country to another. There is scarcely any point, in reference to the treatment of this disease, on which the medical man is called to give an opinion, of greater importance to the comfort of the patient, than that of change of climate; and I believe, that much injury is often done by the removal of patients, who would have been better at home. In deciding, whether a change should be made, and what change would be advisable, there are many points which should be carefully considered: the condition of the patient; the stage and extent of the local disease; the period of the year; and the effects of previous treatment. When the disease has been arrested, a change of air and

climate will often stimulate the constitutional powers, and enable them to carry forward the improvement, after the remedial means by which it had been accomplished have ceased to be of further service. On the other hand, where there is much disorganization of one or of both lungs, and the disease appears still to be advancing, so that the patient must necessarily during winter keep chiefly in the house, the comforts of home and the society of friends will be often found more valuable than a change to a slightly milder climate. In those advanced cases, where there is reason to apprehend that the disease will steadily advance in spite of any treatment, the patient should not on any account be removed from home.

We now proceed to point out the *medicinal* as well as dietetic means, to be employed for the purpose of correcting derangements of the digestive organs, and invigorating and restoring all the nutritive functions.

Though the derangement of nutrition seems to be more in the secondary processes, we often find that there is loss of appetite, and other signs of impaired digestive power, on the part of the stomach itself.

For the purpose of rousing all the nutritive functions, it is very desirable that a complete change should be made in the habits and occupation of the patient; but it is also most necessary that any derangement of the secretions should be rectified by suitable remedies, and that the digestive powers should then be roused and the appetite improved by appropriate tonics. In some cases we find that the tongue is quite clean and the bowels regular, and there appears to be merely inactivity of the functions of the stomach, with loss of tone and want of appetite, without other evident derangement. In others we find the same want of appetite and tone, along with a sluggish state of the bowels; but there is a third class of cases in which we find the secretions deranged, and the tongue

loaded, and white or furred. This latter condition may exist either with constipation or with a loose tendency in the bowels. In the first-class of cases we may proceed at once to give suitable tonic remedies with cod-liver oil; but in those where the bowels are sluggish, a simple aperient should be given as often as may be needed, and an aloetic, or aloes and mastich pill, will be found a useful means of stimulating the action of the bowels. In those cases where the biliary and other secretions are deranged, it is necessary before tonic remedies or cod-liver oil are prescribed, that they should be rectified by means of mild mercurial alteratives. A few grains of grey powder with calcined magnesia and rhubarb may be given for this purpose every night or every second night, till the tongue becomes clean; and where there is an irritable condition of the intestinal mucous membrane with tendency to diarrhœa, a few grains of Dover's powder should be added.

There are many tonic remedies I am in the habit of giving in the early as well as the more advanced stages of phthisis, and before directing attention to cod-liver oil the most valuable and important of this class, in which I think it has been not inappropriately placed, I shall make some remarks on those from which I am in the habit of making a selection according to the nature of the case.

Acids.—I have found the acids, more especially the hydrochloric, the nitric and the lactic acids, the preparations of iron, and of quinine, and some of the vegetable bitters, the most useful of the tonic remedies in the treatment of consumption.

It is well known that the food is dissolved in the stomach by means of the gastric juice, which is an acid fluid containing an albuminous matter, which has been called pepsin, and it is by the combined action of this and the acids, that albuminous or protinaceous articles of food are reduced to a fluid pulpy condition fitting them for absorption. In those forms of dyspepsia which arise from

derangement in the primary assimilation, and which are often troublesome, though perhaps less serious in their consequences than those in which the secondary processes are affected, there is frequently an excessive formation of acid in the stomach. In consumption I have seldom, however, observed an excess of acid, and I believe that Dr. J. Hughes Bennett is in error, when he asserts in order to support his views of the nature of the disease, that the peculiarity of phthisis is that an excess of acidity exists in the alimentary canal. We have not only no proof of such being generally or even frequently the case, but we have also reason, from the very beneficial effects often produced by the organic as well as the mineral acids, to believe that there may be deficiency of the natural acid condition of the gastric juice. We know, however, at all events practically, that there is no class of tonics so generally useful as the acid ones, and as they not only promote the beneficial action of cod-liver oil, but may, like this remedy, be taken with advantage very soon after meals, it has appeared to me that they acted not merely by their tonic influence on the stomach, but also more directly by increasing the solvent action of the gastric juice on the food. When these acids are given with this view, they should be rendered as palatable as possible, and given along with tincture of orange and syrup of lemon. When exhibited with a view to their tonic influence, they may be given with a bitter tonic, such as tincture of calumba or gentian, and should be taken when the stomach is empty. In either way, but especially the former, cod-liver oil may be taken along with the nitric and hydrochloric acids. It was long a matter of dispute on which acids the solvent power of the gastric juice was dependent, but it now appears that, though various other acids besides the hydrochloric and lactic are found in the stomach, these are the only ones which with artificial pepsin are capable of dissolving albu-

minous aliments, and the weight of opinion is in favour of the view originally propounded by Dr. Prout, that the hydrochloric is the acid secreted with the gastric juice on which its solvent power chiefly depends, but that the lactic, whether secreted or formed from the food, serves the same purpose; and these acids are the only ones which with pepsin yield energetic active digestive fluids. It is also a well ascertained fact in relation to the chemistry of digestion, that fats, when added in certain quantity to the gastric juice, promote the solution of albuminous aliments; and hence we can fully understand how it is that cod liver oil given on the surface of an acid mixture, containing the hydrochloric, should so remarkably improve assimilation in cases of pulmonary consumption.

The nitric and muriatic acids in combination have long been known to exert a most beneficial influence in restoring the tone of the stomach in various forms of dyspepsia as well as in phthisis; and I have likewise used the phosphoric with advantage. The lactic is an acid which I was not in the habit of prescribing till more recently, but I now frequently give it in combination with the hydrochloric in cases of consumption, and I can strongly recommend it as a valuable addition to our other means of restoring the digestive powers in this disease.

Chalybeate tonics. — The preparations of iron hold a place in the treatment of consumption of equal or almost equal importance with the acids that have been mentioned. If less generally applicable, they are in some cases more useful and appropriate, and they not only improve the digestive tone, but in those cases where there is pallor from diminution of the red globules of the blood, they fulfil another indication by directly assisting in the restoration of these red particles, for the formation of which the introduction of iron into the system is essential. That there is almost always more or less of an anæmic condition in phthisis was ascertained by Andral, and subsequently

by Becquerel and Rodier, and the indication thus furnished for the exhibition of chalybeates is an important practical one. In the earliest stage, and perhaps in some cases also before the formation of tubercles, the proportion of globules is below the healthy standard: as the disease progresses the quantity falls; and in one case Andral found the proportion as low as 72 parts in 1000 of blood. This corresponds with the paleness of the complexion, which almost always accompanies phthisis in a greater or less degree, except when the patient is flushed temporarily by hectic fever, and it is caused by the deficiency of this important part of the blood. In this respect, consumption resembles chlorosis, and in this diminution of the red globules we have, in the one disease as well as in the other, an indication for the employment of chalybeate tonics, which tend more directly than any other means to restore this deficiency, by introducing iron into the blood. I may here observe that, though we have this diminution of the red globules, we are seldom able to discover a loud continuous murmur in the veins of the neck, which is so common a sign in chlorosis. This difference I account for, from there being in chlorosis not simply a diminution of the red globules, but also an increase of the aqueous part of the blood. The veins are thus kept in a state of tension, which is favourable to the production of the venous murmur. In consumption, on the other hand, especially when the disease is in an active state, there is a diminution not merely of the globules, but of the whole quantity of blood in the system, which, with the relaxed state of the tissues arising from loss of flesh, prevents the degree of venous tension necessary for the full development of this murmur. When, however, the tubercular disease has become quiescent, or has receded, I have sometimes observed the occurrence of a continuous murmur in cases where it had at first been absent; and this I have considered a favourable sign. The absence of the

venous murmur in the anæmia of phthisis is a fact which may sometimes be rendered practically useful in making the diagnosis between this disease and some of those doubtful cases of chlorosis; for where we can discover a loud continuous murmur in the veins of the neck it gives us reason to believe that the case is one of chlorosis simply; and even where there is a feeble continuous murmur along with physical indications of tubercle, it may be taken as a sign of a retrogressive tendency. I originally gave my views on this subject in a former edition of this work, and they have since been confirmed by Dr. Theophilus Thompson, who says, "I may incidentally remark that, according to my observation, the venous murmur occurs less frequently in consumptive patients than in those debilitated by other diseases; and that, as a general rule, those cases of consumption in which it is observed, are apt to proceed more favourably than others."

With respect to the particular preparations of iron which are best fitted to be used in the treatment of consumption, I would direct attention more particularly to the tincture of the sesquichloride, the syrup of the iodide, the citrate and the ethereal tincture of the acetate. These are capable of being made to fulfil all the indications with respect to the use of iron, and by selecting from them according to the nature of each case, we may often accomplish more than a single object at once. I frequently give the tincture of the sesquichloride with an additional quantity of hydrochloric acid, or with lactic acid, in this way fulfilling the indications of giving a combination of tonic remedies well suited to restore the activity of the functions of the stomach, and at same time assist its solvent action on the food, whilst the introduction of iron into the system is likewise secured.

The syrup of the iodide of iron is a good preparation, which has been long used in the treatment of consumption, and is well suited for children.

The citrate and ammonio-citrate of iron are pleasant preparations, and being mild in their action they are the best adapted for those cases in which there is any irritability of the mucous membrane of the stomach. Any of the preparations may be given along with the bitter infusions or tinctures.

There is another very useful and agreeable preparation which I have been much in the habit of prescribing, not only for the purpose of improving the nutritive functions and the tone of the stomach, but with a view to the production of its astringent action on the bronchial mucous membrane in cases attended with profuse expectoration. The ethereal tincture of the acetate of iron is the preparation I employ for this purpose; and its power of checking expectoration is due not merely to the astringent action of the iron, but also to the acetic ether combined with it, and I here may observe that I shall have again to refer to the action of the different kinds of ether on the lungs and bronchial mucous membrane.

Quinine, which is one of our most valuable tonics, may often be given with great advantage in the treatment of consumption; and the various bitter infusions may be used as the vehicles for exhibiting the acid tonics that have been mentioned. In some conditions of the stomach, however, it may answer better to combine them with alkaline remedies.

Cod-liver oil.—I shall now direct attention to cod-liver oil, the most useful of all our remedies in the treatment of this disease, and also the most remarkable in its power of improving the nutritive functions. I consider it one of the most valuable medicines that has of late years been added to the *Materia Medica*, being applicable alike to the treatment not only of consumption when it has shown itself by the presence of tubercles or ulceration in the lungs, but also to all those states where there is a scrofulous or tubercular taint of the blood or system predispos-

ing the individual to these and other local tubercular deposits. I may now reassert that the opinion has been fully borne out which I expressed in the second edition of this work, in these words: Cod-liver oil is not a mere fashionable remedy of the day, but will, if not indiscriminately used and *exclusively* trusted to, maintain the reputation it has attained. Cod-liver oil has been called a tonic remedy, and such it undoubtedly is, inasmuch as it improves the strength, as well as the nutrition of the patient; but in many cases it acts as a sedative also in relieving the cough; and it differs from other tonics, and indeed from most other remedies we are in the habit of giving in this disease, in one important respect, that it aids directly in the nutrition, and may be used with advantage in every stage, sometimes even in the most advanced; and that there are few symptoms which entirely prevent its employment, or may not be overcome by the use of other remedies, so as to enable the patient to take it with more or less benefit. Its ordinary effects are these:—the appetite in general speedily improves; the cough abates; the expectoration becomes less abundant, and less purulent in appearance; the hectic fever diminishes; the skin becomes cooler; the pulse descends towards the natural standard; and the perspirations are arrested. The patient at the same time improves in colour, and gains flesh and strength. Nothing is more remarkable than the change which we sometimes observe in the appearance under the use of this remedy; and it is produced not merely by an increase of fat, but by an improvement in the quality of the blood, and an increase of the muscular and other tissues. An augmention of weight corresponds, therefore, generally, but not invariably, with an improvement in the condition of the patient. We must not, however, omit to state, that these favourable appearances are not always as lasting as we could wish. Some of the former symptoms may reappear, and the

patient relapse, unless we are so fortunate as to have been called in at an early period; but even in those cases where the lungs have been extensively disorganised, the progress of the disease is generally retarded by the judicious administration of this remedy in a greater degree than it could be by any other single medicinal agent that we are yet acquainted with.

Along with such favourable changes in the symptoms there is observed an improvement also as regards the local disease, and those retrogressive signs which have been pointed out show themselves more or less decidedly.

It is important, however, to keep in view that the good effect of cod-liver oil on the local disease is produced chiefly by its power of controlling the constitutional affection, and we have proof of this in the fact that it is a remedy of equal value in other tubercular diseases besides consumption — in tubercular disease of the mesenteric glands and peritoneum, in which I have found it of essential use, and in scrofulous enlargement and ulceration of the external glands, and in caries of the bones and disease of the joints.

Before prescribing cod-liver oil, it is necessary to bring the secretions to a natural condition by the means which have been already recommended for this purpose, and it is also generally advisable to give, in conjunction with it, or for a short time previously, some of the tonic remedies that have been noticed, in order to prepare or enable the stomach to bear its employment; and I have found the acids best suited as a vehicle for its administration, and the class of tonics along with which it may most frequently be given with the greatest advantage. Almost all the oil which is used is brought from Newfoundland, and the best prepared of this, which is pure, pale, and almost tasteless, is the kind which should be taken. The brown German oil, imported from the north of Europe, is a very inferior article, which is much more apt to produce nausea,

but in a few cases I have seen it agree well, and have even found it preferred by patients. In the great majority of cases, however, it does not agree so well, and it possesses no superiority over the best prepared quality of pale oil. In giving the oil we should begin with a small dose — a tea or dessert-spoonful, and gradually increase the dose to one, two, or even three table-spoonfuls, beyond which it is scarcely ever desirable to carry it. It may be taken from half an hour to an hour after each meal, on the surface of an acid mixture, or an acid and chalybeate mixture where there are the indications for the use of steel, or on the surface of a mixture with quinine, where a bitter tonic agrees better, or is found more suited to the peculiarities of the case. Some patients can take it best on water, or milk, or lemon-juice, and there are many that like it best on the surface of orange wine. It must not be supposed that it is a matter of trifling moment how it is given. I believe that it is a remedy which is too often prescribed in a careless or indiscriminate way, without being so combined with the use of other appropriate means, suited to the nature and peculiarities of each case, and the complications which are continually occurring in consumption, as may enable the patient to derive the full benefit it is capable of producing. It may perhaps be said that every remedy is thus liable to suffer from the injudicious way in which it may be used, but this is especially apt to happen with one like cod-liver oil, which is often taken without any medical advice, and in cases where it is not required; whilst in cases of consumption, it is either not persevered with sufficiently, or is considered the sole treatment necessary. In order, however, to draw out the full power of the remedy, great attention must be paid to hygienic treatment; the stomach and digestive functions must be carefully attended to, and the secretions from the liver and bowels duly regulated from time to time. All inflammatory complications affecting the lung

itself, the pleura, or the bronchial mucous membrane, most be removed by the ordinary means. The cough, and also the general irritability arising from such a depressing and exhausting disease, call for the use of appropriate sedative and stimulating remedies, and the perspirations of hectic fever for astringent and acid medicines. Diarrhœa, spitting of blood, and inflammatory complications, often necessitate the omission of cod-liver oil for a time, but it must never be assumed that because these complications occur during its use, they are the effect of the remedy; or when, from any other circumstance, the oil has ceased for a time to be of service, that therefore its good effects have been exhausted. It has often happened to me to find, after using the oil for a considerable period, as much as a month or more, without being able to perceive an appreciable good effect, that, either from a change in the condition of the patient, or from some alteration being made in the other means of treatment, the beneficial operation of the remedy has begun to develope itself, and there has afterwards been a steady improvement. Much judgment and skill may therefore be shown by the physician in seeking out and removing the opposing complications which so often interfere with its successful employment, after which a steady perseverance is required in order to draw out all its curative power. The following *case* will illustrate some of these remarks. It is one of pleurisy, with effusion occurring as a complication along with tubercular disease of the lung; and it shows how important it is that this severe complication should not be overlooked, but treated with appropriate antiphlogistic remedies, whilst the use of cod-liver oil is laid aside for a time.

A gentleman, aged twenty, came from Southport to consult me on the 18th of November, 1852, having been recommended to go to Bowden for change of air. He had a fair complexion, and was pale and delicate-

looking, but, though he had lost flesh, he was not much emaciated, having been trying to take cod-liver oil up to the time I saw him. His chief object in consulting me was not so much to know the condition of the lungs, respecting which he had already had the opinion of an eminent physician in London, soon after an attack of spitting of blood, but to see if I could devise any means to enable him to take cod-liver oil, which had not agreed with him for three weeks. I found that for that length of time he had been troubled with a pain in the right side of the chest, and that his breath had become very short. The tongue was furred, the appetite bad, there was thirst, and the pulse was 110, symptoms all indicating a greater amount of fever than we usually find in cases which have scarcely entered into the second stage. He had evening fever, but not much perspiration in the night. Some moist crepitation below the right clavicle appeared to indicate the existence of tubercular deposit there; but the whole of the right side, especially inferiorly, was completely dull, and respiration suppressed. Percussion also still caused pain, and no vibration was communicated to the hand by the voice. It was at once evident to me that the original tubercular affection of the lungs had become complicated with acute pleurisy three weeks previous, that this had produced effusion into the chest, and had been the cause of the inability to take the oil; and that the patient needed active treatment, and was in a very unfit state to derive any benefit from change of air till the inflammation should be subdued.

A blister was applied to the side, and a mixture ordered containing iodide of potassium, solution of potassa, and spirit of nitric ether; and, as there was a tendency to diarrhœa, small doses of grey powder, with rhubarb and Dover's powder, were given to regulate the bowels. The cough was allayed by a linctus containing oxymel of squill, tincture of digitalis, compound tincture of camphor, and

prussic acid. Under this treatment there was a most rapid improvement, the pain and shortness of breath were removed, the fluid was absorbed, the appetite returned, and he was able on the 27th of November to resume the use of the oil. Finally he gained much benefit from change of air, and on the 25th of January he called upon me, on his return, for the purpose of thanking me, and stating that he felt quite well. Three days after, I had an opportunity of seeing and examining him. He had become so stout and fresh in the colour that I scarcely knew him. He had become strong and active. The tongue was clean, the appetite good, and the bowels regular; the pulse was 86. He had no perspiration, very little cough, and hardly any expectoration. The respiration had returned at the lower part of the right side of the chest, and the sound on percussion had become clear; but there were still some indications of tubercles at the upper part of the right as well as the left lung. Below the right clavicle percussion was not so clear as natural, and a few bubbles were still heard on full inspiration where the crepitation had formerly been perceived. At the left nipple, too, and in the axilla, a few viscid mucous bubbles were perceived, and appeared to show that some isolated tubercles had softened there.

The patient conceived that he was perfectly well, and was most anxious to enter into business; but I strongly recommended him to devote his attention entirely for a time to the improvement of his health, and advised him to continue the oil along with the syrup of iodide of iron. I was sent for to see this gentleman again, on the 20th of April. I found that, feeling himself very well, he had resolved to give his attention to business, and in the middle of March had set out on a journey with this intention, but was attacked with spitting of blood, followed by pleuritic effusion on the left side, for which he again came under treatment.

In many cases, especially where the disease has made considerable advance, the use of cod-liver oil must be continued for months, or even years, being omitted only at times, during short intervals. It is important that the patient should be aware of this; for I believe that the full effects of the remedy are seldom attained unless the patient appreciates its beneficial action, and gives hearty and persevering co-operation.

I have often had cause to regret, in those consulting me, the loss of valuable time, during which the disease had been destroying the lungs, while the patient had either been neglecting the remedy or giving it only such an imperfect trial as rather prejudiced him against it. I had a gentleman under my care who resided in the neighbourhood of Manchester, and had, during his illness, consulted many medical men; but owing in some measure to the importance of this part of the treatment not having been duly impressed upon him, as well as to his own wayward disposition and his objection to take the oil, no fair trial had ever been given to it. He was in so advanced a stage, and so extremely weak, that I had very little expectation of any decided benefit; but, as no proper trial of the oil had ever been made, I urged him strongly, and succeeded in overcoming his objection to it. A very speedy and decided improvement took place in all the symptoms, so that he was enabled afterwards to take a journey into the south of England. In a case like this, where the remedy has been so obviously beneficial, we cannot but regret that it was not used at an earlier period, so that the improvement might have begun before the lungs were so seriously disorganised.

When a patient states that he cannot take the oil on account of sickness, or because it rises again, we should not be readily induced to lay it aside altogether, though it may in some instances be necessary to intermit its use for a short time, in order to remove the irritability of the stomach, or the cause on which it may be dependent. I

know, however, that some medical men, who cannot even yet be fully impressed with the value of this medicine in phthisis, are in the habit of telling their patients that, as the oil does not agree with them, other treatment must be used instead. This I consider to be a grievous mistake, as there is as yet no other remedy, except it were some of the other oils, all of which are less easily assimilated, which could serve as a substitute. Other means should therefore be used, not to replace it, but to prepare the system for the oil, to remove opposing complications, and to educe more fully its beneficial properties. It has been said that cream may be used as a substitute, but though a very good article of diet well suited for some cases, it has none of the medicinal properties of cod-liver oil and no claim to be regarded as a substitute.

External Use of Oils by Inunction.—Cod-liver oil has been sometimes used externally, and no doubt with benefit, in some cases; but if it be unpleasant as an internal remedy, it is infinitely more so when applied outwardly; and I have not, therefore, much experience of it in this way, having always preferred the more natural mode of introducing it into the system by the stomach. At the same time there are some facts which seem to show that this is a mode of introducing it which should not be altogether overlooked, as inunction may occasionally bring the system under the influence of the remedy, where it could not be borne in the ordinary way: and we have also pointed out the remarkable influence of the oils used in woollen manufactories in preventing consumption and scrofula. I may here also remark that, in a case where the oil could not be taken, on account of irritability of the stomach, I gave it as an enema with yolk of egg, with some apparent benefit.

Dr. Theophilus Thompson has related some cases which prove that this very unpleasant mode of using the oil by inunction may sometimes be of material service; particularly the case of a gentleman, confined to bed, emaciated,

hectic, and apparently failing rapidly, with a cavity at the apex of the right lung. There was diarrhœa preventing the use of the oil internally, and he therefore ordered an ounce of cod-liver oil, combined with oil of lavender, to be rubbed into the chest night and morning. He rallied, and recovered so far as to be able to ride about on horseback, and when last examined the physical signs indicated a reduction in the size of the cavity. He has related another case where it was also of decided use; and he has adverted to some experiments made by a German physician, which show that dogs may be fattened by having cod-liver oil rubbed into the skin.

Though I have avoided the application of cod-liver oil externally, I have occasionally recommended inunction with olive oil, a practice introduced by Dr. Simpson, in consequence of observing the facts already referred to, in regard to the comparative exemption of those employed in woollen factories. I have also used cocoa-nut and neats'-foot oil in the same way, but though I am unable to report any cases in which I have obtained any very well-marked beneficial results, I still look upon such auxiliary means of treatment as deserving of attention.

Action of Cod-liver Oil.—The mode in which cod-liver oil acts upon the system is a most interesting subject for inquiry. It has attracted some attention, but has not received all the investigation which its practical importance demands. It is not a matter of mere speculative interest; for, if the mode of action were certainly known, such knowledge would form a basis for further improvements in the treatment of consumption and other diseases. Some advance towards a solution of the problem has been gained by the discovery of the fact that other animal oils, as well as cod-liver oil, have a similar, though none of them an equal, efficacy. Dr. T. Thompson found that neats'-foot oil has in some instances no inconsiderable power of arresting phthisis; and he has

recorded cases in which it was of very decided service. I made trial of it in the Infirmary, but found it more difficult of digestion, and less efficacious than cod-liver oil. Train and spermaceti oils have likewise been tried at the Brompton Hospital for Consumption, and the fact that all of them possess some efficacy has been placed beyond dispute; but the oils obtained from the livers of fish, especially the cod-fish, still stand unrivalled in respect to the facility with which they are assimilated by the digestive organs, as well as their power of arresting the progress of tubercular disease.

The fact that other oils, as well as cod-liver oil, have some power in controlling phthisis, would seem to prove that the efficacy of this oil does not depend on the accidental ingredients—the iodine, the bromine, the phosphorus, or the biliary matter, to each of which its peculiar action has been attributed, but rather upon the essential oily principles. Dr. Winkler seems to think it depends upon this oil differing from other oils in having another radical oxide of propyle instead of oxide of lipyl. Be this, however, as it may, it would seem that oils and fat, after having served various purposes in the nutrition and metamorphosis of the tissues, are ultimately consumed, furnishing fuel for the important function of respiration, and the maintenance of animal heat. Before being thus disposed of, it would seem that they serve other important purposes. It has been observed that their presence in the stomach aids in the solution of the albuminous aliments, and they are essential to the growth of cells, as they form the nuclei. We have reason, therefore, to believe that cod-liver oil may act first by promoting the solution of the food in the stomach, and the formation of cells afterwards. The quality of the blood is improved by it, and the quantity of the red corpuscles increased, so that all the assimilating functions must be rendered more active. By its attraction for oxygen, it would appear to

increase the energy of the respiratory functions, furnishing hydro-carbonaceous fuel well suited for this purpose, and thus, as well as by suppressing the purulent secretions, it may promote a more uniform action of the oxygen on the blood and system. If this view of its action be correct, it should lead us to inquire into the effects of other hydro-carbonaceous bodies, in the hope of discovering other efficacious means of promoting the removal of this disease, and it should lead us to regulate the diet of consumptive patients with special reference to the function of respiration. The experimental researches that have been lately made by Dr. E. Smith would seem to show that this subject is beginning to receive the attention it deserves.

Diet.—As consumption is a disease of nutrition, it is very important that a proper selection of diet should be made. It should consist of the lightest and most nutritious articles of food the stomach of the patient can digest, and in the great majority of cases some stimulant, such as wine, ale, or porter, should be allowed. If the patient can digest a generous diet with animal food, there is no occasion to fear it being too stimulating; but as some have not sufficient appetite and digestive power to enable them to use the stronger kinds, it is often necessary to select the lighter sorts, such as milk, eggs, oysters, tripe, and strong soups.

Milk is a kind of aliment formed by Nature herself. It may, therefore, be regarded as a type, or pattern, for all other kinds of nutriment; it has received the unanimous approbation of physicians in all ages: and a close examination of the ingredients it contains gives us still stronger reasons for regarding it as one of the best kinds of aliment in this disease. It contains the curd, which is an albuminous principle, easily digested and assimilated, so as to be capable of supplying the place of the worn-out tissues; and as it already approaches very nearly in com-

position and physical properties to the albumen of the blood, there is reason to believe that it may be assimilated with less chance of the formation of imperfectly organised or tubercular particles. It contains also sugar of milk, which constitutes the fuel required for respiration and the maintenance of animal heat; and the butter, or oily part, is believed to serve a similar purpose, and is now regarded as an important alimentary article. No well-constructed system of diet will be found wanting in some article belonging to each of these, the three most important classes—the albuminous, the oleaginous, and the saccharine or amylaceous; and it is one great object of cookery to make a wholesome and palatable combination of them.

Milk is best taken when new, but there are some with whom it is more digestible when boiled. In cases where there is much irritability of the stomach, it will be found advantageous to add to it some lime-water, and I have found this combination of great use in stopping vomiting in many cases of consumption.

Asses' milk has long been celebrated as a light unstimulating kind of food in this disease, and I have, in several cases, attended with great weakness and irritability, found it of decided service. Its greater lightness is due to the fact that it contains less butter and curd than cows' milk, and a larger proportion of sugar of milk.

Eggs consist chiefly of albumen, and are highly nutritious articles of food, which suit the digestion of most persons, but they do not agree with all. The white of egg is a very pure form of albumen. The yolk is composed of about 20 per cent. of albumen, with about 30 of oily matter, in a state of subdivision and mixture, which adapt it well for digestive purposes. Milk and eggs, and their various combinations, with farinaceous articles, such as rice, sago, and tapioca, are the lightest kinds of food, and the most suitable articles where the stronger kinds of animal food cannot be borne.

The oily or fatty articles of food should not be overlooked, a certain quantity of them being essential for digestion and nutrition, and butter is not to be regarded as a mere seasoning agent to render the bread more palatable, but as an important article of diet, which aids in the digestion of other kinds of food. In connection with the use now made of fish-oil, I may also observe that various kinds of animal fat, especially goats' and venison fat, were anciently used as articles of diet in this disease. The following table will show the proportions of oil or fat to the other most important alimentary principles in some of the chief common articles of diet:—

	Beef.	Eggs.	Milk.	Fine Wheaten Flour.	Oatmeal.
Fibrin, casein, albumen, or gluten - - - -	89	55	35	12	21
Fat - - - - -	7	40	24	2½	7
Starch or sugar - - -	—	—	37	83½	70
Ash or mineral matter - -	4	5	4	2	2
	100	100	100	100	100

Sugar of Milk and Whey.—These are non-nitrogenous articles of food, requiring some notice here. As we have seen that there is reason to believe that the efficacy of cod-liver oil is partly due to the fact of its furnishing material well fitted for the support of respiration, it becomes us to inquire if we can assist its action by any kind of diet calculated to produce a similar effect. Liebig has shown that there are two kinds of nutriment,—the plastic or sanguigenous, which form the tissues of the body, and are derived from the vegetable as well as the animal kingdom. A portion of these is necessary, not only in pulmonary diseases, but under all circumstances. The other is the non-nitrogenous, or combustible, which support respiration. Starch, sugar, fat, and alcoholic liquors are the chief of these.

It must be evident, that if oxygenation be deficient in chronic diseases generally, and in pulmonary diseases more especially, the deficiency could be counteracted, so far as the ingesta are concerned, only in one of three ways,—by giving remedies capable of directly communicating oxygen to the system—by giving such as would determine a greater action of the atmospheric oxygen upon the tissues of the body, or the combustible constituents of the food—or by selecting articles of diet having a strong affinity for oxygen, and which might therefore cause increased absorption at the lungs. It has been thought that nitric and nitro-muriatic acids have some oxygenating power; but whether this be so or not, there can be no doubt that, given in conjunction with cod liver, they promote its beneficial action,—a fact of which experience has fully convinced me. It has also been thought that chlorate of potass has likewise an oxygenating power; and it has been said by Dr. Williams and others, that it is a remedy of some efficacy in this disease. Peroxide of hydrogen, or oxygenated water, is a compound which would certainly have a direct power of communicating oxygen; but I am not aware that any trials have been made with it.

Again, with reference to remedies capable of increasing the action of oxygen on the tissues of the body or the food, I would observe that alkalies have this power to some extent. The blood is an alkaline fluid, and its alkalinity is essential for the various purposes it serves, more especially respiration and animal heat. The experiments of Dr. Parkes* show that liquor potassæ is a remedy which determines increased oxygenation of the tissues; and I may observe, that in some states of pulmonary disease it is a very valuable medicine.

In a former work I directed attention to *Sugar of Milk*, and stated that of the combustive articles of food there

* British and Foreign Med.-Chirurg. Review. January, 1853.

is none which appears to have a stronger affinity for oxygen. It had not then been used to any extent as an article of food, but I quoted Liebig's observation, that in the cheese-dairies of England thousands of cwts. of this valuable respiratory matter are annually lost in the whey, and recommended it as an article of food in consumption, showing that there was reason to expect a beneficial effect, seeing that whey and asses' milk, both of which are useful articles of food in consumption, owe their virtues chiefly to this, their main ingredient. I showed also, from the power it has of reducing some of the metallic oxides when conjoined with an alkali, that on being absorbed into the blood, which is an alkaline fluid, it must be rapidly oxidised and converted into lactic acid.

I may now state that, since then, sugar of milk has been used to a considerable extent as an article of diet, especially for children, and goats' whey is now very much employed in consumption, more especially on the Continent. "Of late it has become much the fashion in Germany, to combine the treatment by whey with a course of mineral waters; hence, its preparation on a large scale has been introduced at many of the inland watering places, to which our German cousins are so much in the habit of resorting in the summer months."* This has been done at the picturesque brunnen of Rehburg, in Hannover, the baths of which are under the superintendence of Dr. Beneke, who has given a scientific exposition of the effects of whey, and has shown that the scrofulous cachexia is the morbid condition for which the alterative treatment by whey is chiefly indicated.

At Interlachen, in Switzerland, there is an establishment at which the treatment by means of whey is carried out, and as I have already stated that residence in mountainous regions is beneficial in consumption, I may ob-

* Rationale of Whey-cures, by Dr. Beneke. Brit. and For. Med.-Chirurg. Review, vol. xii.

serve, that there are in Switzerland some whey-cure establishments at very elevated situations, such as at Gais, and on the Weissenstein, where the advantages of mountain air, and the "cure de petit lait," might both be tried together, by those sufficiently strong to avail themselves of these means of treatment.

Treatment of the Local Disease, its Symptoms and Complications.—Having now indicated the line of treatment that should be carried out in respect to the constitutional affection, we proceed next to show how the different symptoms and complications arising from the presence of local disease—the tubercles in the lungs—are to be treated. We shall take them as nearly as possible in the order in which they have been described in this work.

Cough.—As the cough is one of the most constant, as well as a very troublesome symptom, it demands a large share of our attention in the treatment. We must, in treating it, endeavour to ascertain how far it is dependent on irritation from the mere presence of the tubercles in the lungs, and how far upon bronchial irritation induced by them. There are some cases, where cough is by no means a prominent symptom, even when the lungs are undergoing rapid disorganisation, and where, therefore, sedative and expectorant remedies are scarcely needed. When, however, the tubercles cause either local or general irritation, the preparations of morphia and opium are the remedies which most generally afford relief. In most cases, morphia will be found to answer well, but there are some individuals with whom it does not agree so well as the compound tincture of camphor, or the tincture or other preparations of opium. The tincture of hyoscyamus sometimes answers better than either morphia or opium, but it should be prescribed in doses larger than those in which it is usually given. The compound conium pill alone, or with the addition of a small quantity of morphia, will often be found very useful.

There are many cases where the patient does not sleep, either owing to general irritability of the system, or to the local irritation and the frequence of the cough. A sufficient dose of opium or morphia, to cause sleep, is often of the greatest service in such cases.

When the cough arises more from catarrhal complication than from the irritation produced by the tubercles, counter-irritation should be used, and expectorants, such as squill, should be given along with sedatives.

Counter-irritants are often of use in relieving the cough, especially when it is aggravated by any inflammatory complication, and they constitute a very important part of the means which we have at our command for the treatment of the local symptoms and complication of consumption. I may state, however, that I do not employ counter-irritation indiscriminately in all cases, but only where there is some special indication, such as pain or unusual severity of cough. It was formerly the practice with some medical men, to keep up permanent counter-irritation by means of setons, issues, or open blisters. I have not seen anything that would lead me to consider this a beneficial method of treatment, and I think that everything should be avoided, which can add permanently to the irritation arising from the disease itself. I occasionally blister where there is a pain or other evidence of inflammatory action, but I more frequently apply a strong tincture of iodine, or bring out an eruption of pimples by means of croton oil.

We have seen that the *expectoration* in phthisis proceeds from two principal sources—from the mucous membrane of the lungs, and from the ulcers and cavities which form in the advanced stages. It is scarcely possible to produce any influence over the latter, except by slow means, and only indirectly by improving the health and constitution. The former is under the influence of remedies which act quickly, and such well-known ex-

pectorants as squill and ipecacuan, are often of great use in causing the mucous secretion to be thrown off more readily. There are, however, cases where the expectoration is very profuse, and debilitates the patient greatly; and I wish to direct the attention of medical men particularly to those remedies which may be used with advantage in checking this discharge. The remedies which I have most frequently used for this purpose are, creosote, pyroxylic spirit or naphtha, and acetic ether. Creosote is a valuable medicine in pulmonary diseases, and in many cases of consumption, especially in those in the advanced stages. I have seen it relieve the cough, promote easy expectoration, and at the same time lessen the quantity of the discharge. It seems to produce its effects chiefly by its action on the mucous membrane, for, in some cases of chronic bronchitis, I have found it equally efficacious. In gangrene of the lung, in chronic pneumonia, and in phthisis with fetid expectoration, its antiseptic and astringent properties render it peculiarly valuable, and it may be inhaled with advantage, as well as taken internally. The medicinal naphtha is a mixture of several compounds, but consists chiefly of pyroxylic spirit. Though we know that it has no curative power, we occasionally meet with cases where it is decidedly useful in relieving cough, checking profuse expectoration, and stopping sickness.

In September 1854, I read at the Meeting of the British Association for the Advancement of Science, held at Liverpool, a paper on the properties of compounds of some of the organic radicals, more particularly ethyle, which was subsequently published in the "Association Medical Journal." In that paper I directed attention to the action which the compounds of ethyle have on the mucous membrane of the lungs, especially in checking secretion; and I showed that the acetate of the oxide of ethyle, commonly called acetic ether, may be advantageously

used alone or in combination with sedatives, such as morphia, to relieve cough; and I stated that we have no remedy better suited to restrain profuse expectoration. Three cases were given by way of illustration, one of which is subjoined:—

P. A., a man about fifty, was admitted into the Infirmary with cough of three years' standing, but aggravated by a recent attack of cold. He had dulness below the right clavicle, and other signs indicating tubercular deposit. He had also sibilant and mucous râles over both lungs, before and behind, in every part, indicating recent bronchitis. He was emaciated; his breath was very short; and the expectoration very copious; the upper stratum consisting of froth and thin clear fluid; the lower of thick muco-purulent matter. On admission, cod-liver oil was prescribed; and two days afterwards, with the view of checking the copious expectoration, twenty minims of acetate of the oxide of ethyle were given three times a day. Three days after, it was found that he did not expectorate one quarter of the quantity he had previously done; the secretion consisted only of the lower thick stratum; and the expectoration of thin frothy fluid was entirely stopped. He had some tightness in the chest, but felt better, and had more appetite. He subsequently used inhalation of iodide of ethyle, and gained flesh and strength by continuing cod-liver oil and other suitable means, and went out much benefited. The effect of the remedy in this and similar cases has convinced me that it has no marked effect upon the purulent secretion proceeding from tubercular cavities, but that it has a decided and most beneficial effect upon the bronchial congestion and relaxation which so often co-exist with tubercular disease, and are a chief cause of the copious secretion from the lungs in consumption, as well as chronic bronchitis.

I have continued to use this remedy, which has a power of checking profuse expectoration, of which I believe the

profession is not aware, and I consider it the most pleasant and harmless remedy we can employ for this purpose.

When the cough is of spasmodic character, I have sometimes given small doses of extract of stramonium with ipecacuhan or compound squill pill. I have also used the compound spirit of sulphuric ether to alleviate cough and dyspnœa, and for the same purposes I have occasionally used inhalation of chloroform with great advantage in some very distressing cases.

With regard to the use of medicines by inhalation, I may here observe, that medical men have hitherto been disappointed, in almost all the means they have tried for the treatment of pulmonary diseases in this way. With respect to consumption, we have no reason to be surprised that this should be so, when we consider that the tubercles are merely the local manifestation of a constitutional disease; but yet we might have expected that a greater amount of benefit would have been derived from the direct application of suitable remedies to the part affected. It appeared to me that the want of success might have arisen, not so much from inhalation being an inappropriate mode of treatment, as from the proper kind of remedies suited for inhalation by their volatility not having been used. Iodine, from its constitutional action in scrofulous diseases, had been considered peculiarly well fitted, being a volatile substance. It has, however, been long laid aside for this purpose, on account of the irritation it produces; but in combination with ethyle it forms a volatile ethereal fluid, very like chloroform, and having similar anæsthetic effects when inhaled, besides producing in this way all the constitutional action of iodine. I was led to make trial of this volatile fluid, and in the paper already referred to I have given a full account of its action; and I may now state that it may be used in some cases of consumption to relieve cough, in the same way as we would give chloroform, from fifteen to twenty drops being inhaled.

It also produces the constitutional effect of iodine on the system at the same time, but I have never seen much reason to believe that iodine exerts any decided beneficial influence in tuberculosis beyond its tonic action, and therefore I would not carry out its employment so much with a view to its constitutional effects. When sufficiently diluted with air, by being inhaled from a proper apparatus, it relieves cough and difficulty of breathing very decidedly in some cases of phthisis. I prescribed it with very good effect in the case of a gentleman, who suffered long from asthma, arising from emphysema. He had previously used chloroform till it had ceased to be of any benefit. The iodide of ethyle continued long after to afford him great relief and compose him to sleep.

Pain.—Though consumption may run its whole course even rapidly without pain in the chest being ever experienced, it is one of the most common, and often a distressing symptom. Being generally an indication of inflammatory action in the pleura or lung, it requires in most cases mild counter-irritation. When slight, a sinapism may suffice for its removal, or turpentine fomentation, or the application of compound camphor liniment. When more severe or persistent, the part may be brushed over with blistering fluid. If there be reason to think that the pain is neuralgic or muscular, the opiate liniment may be applied, or a belladonna plaster; and I have also found an embrocation made with chloroform, croton oil, bitter almond oil, and soap liniment, useful in such cases.

Hæmorrhage from the Lungs.—Spitting of blood, we have seen, may be the first symptom of pulmonary disease, and occur before it is possible to detect it by physical examination. The quantity brought up is not usually large at such an early period, and the hæmorrhage itself may require very little special treatment beyond rest and the use of some mild astringent, the main object in such

cases being to ward off the disease by attending to constitutional treatment and hygienic management.

In the second and third stages we often have hæmoptysis to a moderate extent, the blood apparently coming from a minute vessel, or oozing from an ulcerated surface, when it is frequently found to be intimately mixed with the expectoration. In some of these slighter cases it is scarcely necessary to alter the treatment, or to intermit the use of cod-liver oil, when the patient is taking it; but he should always be kept quiet, and the more astringent tonics should be given, such as the infusion of roses with sulphuric acid and quinine; or, if there be a persistent tendency to spitting of blood, alum may be substituted for the quinine. When there is any feeling of soreness in the chest, a sinapism or turpentine fomentation, or the blistering fluid, may be applied.

There are other cases where the hæmorrhage is excessive, amounting often in a very short time to several pints, and sometimes recurring at intervals for several days. In these cases it proceeds from rupture of a large vessel. The patient is speedily reduced to a state of great weakness, and the danger is proportionally great. The treatment should consist in extreme quietness, the patient being scarcely allowed to speak. The cough should be allayed by morphia or opium, in considerable and frequently-repeated doses. The patient should be kept cool, and food or drink should be cold. Small pieces of ice may be frequently taken, but I doubt if its application to the chest be advisable, as this must tend to drive the blood inwardly. Bloodletting is sometimes resorted to in these cases, but though I am not prepared to assert that it may not be of service in a few exceptional cases, where there is more fulness of blood than is usual in phthisis, I believe that it is far more frequently injurious; and I think it should not be practised where the quantity of circulating fluid has been reduced below the normal standard.

The chief means to be trusted to in these alarming cases are extreme quietness, iced acid drinks, sedatives, and astringents. Alum and gallic acid are those I chiefly use. The former may be given in solution with sulphuric acid, to which some preparation of opium or tincture of henbane may be added. It is an energetic astringent, which acts quickly, and produces none of the depressing injurious influence on the stomach and constitution which the acetate of lead causes.

In treating the symptoms and local complications which are liable to occur in consumption, we should never lose sight of the important fact, that there is constitutional debility, and where we have a choice of two remedies capable of fulfilling the same indication, we should select the one which is least apt to be prejudicial to the general health; and alum is a remedy which has appeared to me to be not only powerfully astringent, but free from all injurious influence on the digestive organs and the constitutional affection. I, therefore, always prefer it to acetate of lead, which I have almost entirely discarded in the treatment not only of hæmorrhage, but also of diarrhœa, on account of the pernicious influence which the latter remedy appears to produce even when taken only for a short time.

Gallic acid is another valuable astringent remedy, which is, like alum, not only free from all injurious influence on the constitution, but likewise tonic in its action. It has not appeared to me to be so rapid in its effects, but I believe that it is absorbed into the blood, and that when given in scruple doses every hour or every two hours, it acts as one of the most powerful of our astringent remedies. In some cases I have given both of these remedies at the same time—the alum as often as an attack came on, and the gallic acid at regular intervals, with a view to its slower, but probably more certain, ultimate action.

Turpentine fomentations may be used in these cases to

induce its revulsive as well as its astringent action. Sinapisms and blisters are also sometimes useful, by relieving any internal congestion or inflammatory irritation that may be set up; but in cases of simple hæmorrhage from a large vessel, we can scarcely expect any great amount of benefit from these external means.

The immediate danger in these cases of profuse hæmorrhage is always great, though they prove less frequently fatal than we should expect. I have seen many cases, reduced to the lowest state of apparently almost hopeless weakness, recover by carrying out the plan of treatment now laid down, of which the following is a striking example:—

On the 21st of July, 1858, I received a telegraphic summons to visit a gentleman, about twenty-five years of age, who was residing in North Wales. I found that he had brought up enormous quantities of blood, by which he had been reduced to a state of extreme feebleness, and the hæmorrhage was still going on. He was pallid, faint, perspiring, and the pulse extremely rapid and small. I could not attempt to make an accurate examination, on account of his weakness, and the danger of inducing a fresh attack; but the previous cough and symptoms, and the dullness on percussion below the right clavicle, pointed distinctly to tubercular disease of that lung. He had been carefully attended to by two experienced medical men, who had bled and leeched him, and used many of the ordinary means, but had adopted a more lowering plan of treatment than I should consider advisable in such cases. Alum, with sulphuric acid, and tincture of opium, was prescribed for him, perfect quietness was enjoined, and all medicines that might act on the bowels or necessitate the least motion were avoided. Ice was ordered to be taken freely, and restorative food, with the cautious use of small quantities of wine. Under this treatment he rallied, and the hæmorrhage did not return for thirty-six

hours, when there was again a recurrence of hæmorrhage to a moderate extent. I recommended that the same treatment should be steadily carried out, without material change. From that time there was no return, and in ten days he was allowed to get up. Within a month he was able to visit me in Liverpool, for the purpose of being put on a plan of treatment to arrest the tubercular disease, which an examination showed to have been the cause of the hæmorrhage, and to be in the upper part of the right lung.

In all such cases of severe hæmorrhage, it is of the utmost consequence that the patient should be kept quiet, till the ruptured or ulcerated vessel has time to heal, or become plugged by a fibrinous clot being organised. I believe, from what I have observed, that ten days are necessary for this to be effected, and this length of time should be allowed to elapse from the last considerable appearance of blood, before the patient is permitted to excite the circulation by any kind of bodily, or even by much mental, exertion.

Hectic Fever, Perspirations. — In the course of the disease, attacks of temporary febrile disturbance often come on, which in general arise from some local irritation. It is necessary, when this occurs, to suspend tonic treatment for a few days, and remove the febrile disturbance by saline and sedative remedies. Saline effervescing medicines are sometimes useful, and the bi-carbonate of potass, with nitrate of potass, and also in some cases with the addition of hydrocyanic acid, may be given in a state of effervescence with lemon-juice. The solution of the acetate of ammonia, with spirit of nitric ether and acetate of morphia, to which oxymel of squills may sometimes be added, forms a mixture well suited to relieve these febrile attacks.

The remitting fever which constitutes hectic scarcely requires any special treatment, those means calculated to arrest the disease being the best suited to moderate the hectic fever and check perspirations.

There are, however, some cases where the perspirations are so prominent a symptom as to call for special attention. The mineral acids that have been already noticed are amongst the best remedies, but the diluted sulphuric acid has in some cases appeared to me to be more effective in checking perspiration than any of the others. Of the organic acids the gallic is the most useful. The bed-clothing should not be heavy, and the room should be well ventilated. Spunging the chest with tepid vinegar and water has often a very good effect, and the nitro-muriatic acid may likewise be used with advantage as a lotion, for the purpose of checking profuse perspiration. The oxide of zinc is a remedy that has been strongly recommended, but I have been rather disappointed in its effects.

Dyspepsia and Vomiting.—It has been shown that one of the great objects in the treatment of the constitutional state is to promote as far as possible the healthy performance of the digestive and nutritive functions. We not only find, however, that want of tone and power on the part of the stomach and digestive organs are usual symptoms, but also that, in many cases, there is a peculiar irritability of the stomach, which proves a great obstacle in the treatment of the disease. Unless we succeed in overcoming this irritable condition of the stomach, which causes sickness and vomiting, we cannot hope to succeed in arresting the disease, as it prevents the patient taking a sufficient quantity of food, and also cod-liver oil, which are so essential for recovery from a disease in which all the nutritive functions are impaired.

The first thing to be done in these cases is to regulate the biliary and intestinal secretions by suitable alterative aperients; combined, however, in those cases where there is any tendency to diarrhœa, with opium or Dover's powder.

The acids that have been noticed are often sufficient to

restore the tone of the stomach, and remove nausea even; but where they do not agree, alkalis with a tonic bitter infusion may be tried. I have already observed that lime-water with milk is sometimes very efficacious, especially when there is acidity. Effervescing medicines sometimes give relief, as well as brandy with soda or seltzer water. Five or six drops of chloroform on sugar may be tried where the other means fail.

The pyrogenic remedies, of which creosote, medicinal naphtha, and tar water are the chief, have a remarkable and peculiar power in relieving the dyspeptic sickness, and vomiting of phthisis, and they, and bismuth in those cases of sickness with diarrhœa, are the remedies on which I place my chief reliance.

The power of creosote in stopping sickness and vomiting is so well known, that I need only observe here that it may be given for this purpose in phthisical cases either in pill alone, or with oxide of silver—another remedy which checks irritability of the mucous membrane, or in mixture with morphia and other remedies that relieve cough.

Medicinal naphtha is another remedy which often acts very promptly, and in some cases I have found it of the greatest use in stopping sickness.

In my Report, published in 1853, I directed attention to tar water, a remedy which had formerly a great reputation in the treatment of this disease. I there stated that I ad made trial of it, and found it of great service in many cases of consumption; that it produced a gently stimulating and tonic influence upon the whole system, and often relieved the general febrile disturbance and hectic, checking perspiration. I further observed, that I had found one of its most valuable properties to be its power of stopping the sickness and vomiting which so often interfere with the use of cod-liver oil, and cause it to rise, or produce unpleasant eructations. Four cases

were given in illustration, which it is unnecessary to detail here again.

Diarrhœa.—This is one of the most harassing of the symptoms, and usually comes on in the advanced stages. When the secretions are out of order, and the tongue is not clean, a few grains of mercury with chalk and Dover's powder are often very useful. The common chalk mixture, with tincture of opium and aromatic confection, will at first be usually found sufficient to check the looseness, but in the advanced stages of the disease, and where it has recurred repeatedly, there is sometimes ulceration, and it is then an obstinate and harassing complaint, which taxes all the ingenuity of the medical attendant to afford relief. Where the vegetable astringents, such as kino and catechu, fail in checking it, we may still succeed with the more powerful metallic ones, such as the sulphate of copper. This has often, however, a very unpleasant effect on the stomach, causing vomiting, and, therefore, though it is a most active astringent, I seldom prescribe either it or the acetate of lead, the injurious influence of which I have already noticed.

There are two astringent remedies which I greatly prefer to either of these—viz., the nitrate of silver, and the trisnitrate of bismuth. We often find that sickness and vomiting go along with diarrhœa; and both these remedies have the great additional advantage of tending not merely to stop diarrhœa, but also sickness. Bismuth having a very beneficial influence on the irritable condition of the stomach, as well as on the relaxation of the bowels, I very frequently prescribe it, and usually along with gallic acid and opium—a combination, from the astringent tonic influence of which I have, in many cases, seen the best effects.

Complications.—It happens not unfrequently that the *bronchitis*, which almost always exists more or less imme-

diately around the tubercular deposit, spreads throughout the lungs, causing increased severity of the cough, oppression, dyspnœa and febrile disturbance. Counter-irritation, by blistering, is one of the best means that we can use to remove this complication; and where there is much febrile disturbance, saline medicines, with ipecacuan or squill, or with antimony, should be given. In some cases the compound squill pill with morphia will be found of great use in loosening the expectoration. Naphthaline is a powerful expectorant, to which I directed attention in my Report in 1853. In the dose of from three to ten grains it has a very decided effect in relieving cough in consumption and in chronic bronchitis; the chief objection, however, to it is its unpleasant flavour, and the difficulty of disguising this.

Pneumonia is a complication requiring treatment similar to that of bronchitis, but more active; and antimonial remedies and blistering should be pushed further, and small doses of mercurial medicines are often of use in causing resolution of the inflammation, without it being necessary to carry them so far as to affect the system. I believe that small doses of calomel and other mercurial medicines may be given so as to increase the secretions, and assist materially in subduing inflammation without acting at all on the gums. In the treatment of phthisis and its complications, though I frequently use mercurial medicines, I always endeavour to avoid their constitutional action.

Pleurisy is another complication which we are constantly meeting with in every stage of the disease. In its slight form, it is the chief cause of the pains felt in the chest, and it may produce some effusion of lymph, which gives rise to the adhesion of the pleura. Counter-irritants, we have already stated, are the chief means of treating such partial attacks. In the more severe cases, however, where the inflammation extends generally over the surface

of the pleura, causing serous as well as fibrinous effusion, much difficulty of breathing and fever are usually induced, and the strength of the patient is often greatly reduced by a complication which causes compression of one of the lungs, and seriously embarrasses the breathing for a long period.

It was formerly the custom to bleed generally as well as locally in these various complications, but even local depletion is now almost entirely discarded in the treatment of the inflammatory complications of phthisis. Consumption being a disease attended with debility and anæmia, we should always be cautious in practising any form of depletion, especially such as withdraws the red particles of the blood; and though there can be no doubt that local depletion will relieve pain, oppression, and all the symptoms of inflammation, the loss of blood must have more or less of an injurious tendency afterwards; and, therefore, though not opposed to depletion in simple pneumonia or pleurisy, in the tubercular forms I have thrown it aside almost entirely.

In pleurisy, with effusion, complicating tubercular disease of the lungs, I apply blisters, which produce local depletion without removing the red globules of the blood, and give saline antimonial medicines, and small doses of calomel with opium, but endeavour to stop short of the constitutional action of the remedy, the object being to promote all the secreting functions. When febrile action has subsided, I give iodide of potassium with solution of potass, or with the bicarbonate and other diuretics. As absorption advances, the use of cod-liver oil may be resumed, after which the treatment becomes similar to that of ordinary uncomplicated cases.

Varieties of Phthisis.—It must be obvious that the *acute*, or galloping variety of consumption, is least under the control of any plan of treatment. In this variety it is

even more necessary than in the ordinary form that all lowering treatment, by any form of depletion, or by calomel or antimony, should be avoided. Counter-irritation may, however, be of use; and stimulants, such as ammonia with saline medicines, and with such anodynes as morphia and opium, may be given. In other respects, the treatment must be similar to that of the ordinary form.

The *Laryngeal* variety requires, in addition to the ordinary treatment of consumption, topical medication likewise, by the direct application of a strong solution of the nitrate of silver to the mucous membrane of the glottis and larynx. The utility of this method of treatment may now be considered to be well established; and in many cases of consumption, complicated with chronic inflammation or ulceration of the larynx, it may be used with safety and great benefit. I have adopted this local treatment with the greatest advantage in a large number of cases, but where phthisis is far advanced, and there is great debility, it should be used with some reserve and caution. The method of applying the solution, of the strength of from half a dram to one dram to the ounce of distilled water, by the introduction of a sponge fastened to the end of a curved piece of whalebone, is now so well known, that it is unnecessary to describe it here. I have applied the solution both in this way and by means of the syringe, which is used to inject it. The former, being the most manageable method, is the one most commonly adopted. That the sponge, saturated with the solution, may be introduced into the larynx with a little dexterity does not admit of any doubt; but as it is commonly done, I believe it is far more frequently rubbed merely over the orifice of the glottis, and passed down into the pharynx. Applied even in this way, however, I believe it frequently does much good.

When the solution has been injected, I have found it sometimes followed not only by the immediate spasm

which always occurs when it reaches the interior of the glottis, but also by pain afterwards even in the chest; and in consequence of the difficulty of regulating the quantity injected, I should, in ordinary cases, prefer the use of the sponge.

In the *two* following *cases*, in both of which I have no doubt, from the severity of the symptoms, that there was ulceration of the larynx, the solution was applied by the sponge as well as by injection, and with very satisfactory results.

A medical gentleman, aged thirty-four, practising in one of the manufacturing towns of this county, consulted me on the 21st of July, 1854, on account of a laryngeal affection, attended with cough, hoarseness, difficult breathing, and a peculiar hissing inspiration. He had also pricking, smarting sensations, and a feeling of constriction at the glottis, such as would arise from ulceration, and at times he had entirely lost his voice. In the night he had sometimes had severe paroxysms of difficulty of breathing. He was in large practice, and attributed his illness, which came on like a common cold, with hoarseness, to hard work and professional wear and tear; but he belonged to a consumptive family. The previous summer he had consulted an eminent physician in London, who gave him to understand that he had tubercles in both lungs, but the physical signs were so obscured at the time I saw him that it was not possible to detect their existence. He had not much expectoration, but it had been coloured with blood. The vital capacity of the chest was good, being 235 cubic inches, his height five feet nine inches. He had both applied and attempted to inject a solution of the nitrate of silver himself, but not so as to produce any good effect. I applied it in the strength of a dram to the ounce, by means of the sponge; and, as he found that he had derived benefit, he returned in a few days for the purpose of having it again applied. He then resolved to

have it regularly used, and came to reside for some weeks in Liverpool, and had the solution applied, and sometimes injected, at regular intervals, and at the same time took cod-liver oil. His general health improved, and the laryngeal affection was greatly relieved by the treatment; but he did not find himself strong enough to resume practice during the winter, and therefore resolved to spend it at Hastings. In June, 1855, he called upon me, and was then stout and healthy-looking. His appetite and strength had improved very much on going to Hastings, and he had got rid of all that had remained of the laryngeal affection. As he was still not entirely free from cough, he thought of going a voyage to Australia, instead of resuming his practice.

George H., a ship carpenter, aged fifty-two, was admitted into the Royal Infirmary on the 27th of January, 1853. He was weak and emaciated, and he had much difficulty in breathing, and considerable lividity of the face. He had a harsh stridulous cough, pain in swallowing, and the voice was so hoarse that he could only speak in a whisper. He had chills, but no night sweats, and he expectorated a considerable quantity of thick muco-purulent matter. His illness had commenced with spitting of blood eighteen months previous, since which he had got gradually worse. The sound on percussion seemed less clear than natural below both clavicles, especially the right, on which side there was moist subcrepitant râle, obscured in some measure by the affection of the larynx. Over the larynx, respiration was dry and harsh, and though a slight sibilant râle was heard on a subsequent occasion, none was audible at that time. A pectoral mixture and cod-liver oil were prescribed for him. On the 4th of February the throat and fauces were carefully examined, and it was found that they were much inflamed, the mucous membrane being of a very dark red colour.

The parts around the glottis were injected with a solution of nitrate of silver, of the strength of half a dram to the ounce. It caused much coughing and a burning sensation at the time, but the next day he felt relieved. The report on the 12th was,—"The solution has been applied every day, or second day. He has now no uneasiness in the larynx, and he has some voice, which is however very hoarse. The general health and strength keep pace with this improvement, and he gains flesh." On the 17th, though the general health was still improving, he had taken cold in the throat, and the voice was again more hoarse. The redness of the fauces was also found to have increased. The solution was applied, and an embrocation with croton oil rubbed externally upon the larynx. The same treatment was continued, the solution being applied at longer intervals during the remainder of the month of February, and he steadily gained flesh and strength, the voice also improving. On the 3rd of March he was quite free from pain in the larynx in speaking or swallowing. He had very little cough or expectoration, and he felt his general health so good that he wished to go out. As the voice was still however hoarse, I injected a stronger solution, made with two scruples to the ounce, completely and effectually into the larynx. It produced cough and spasm, and burning sensation in the larynx. On the 5th of March he had no difficulty in swallowing; he could breath with great freedom, and his voice was strong, though hoarse. He had become very much stouter and stronger, and was altogether much pleased with the change in his condition. The state of the lungs had also undergone much improvement, and there was a diminution of subcrepitant rale below the right clavicle.

On the 7th of March he was made an out-patient, and afterwards came again to return thanks, and to state that he was so well that he intended to resume his employment.

Phthisis with fetid breath and expectoration.—The main indications in this variety are in many respects the same as in ordinary cases, but the depressing nature of the disease, and the fact too that this variety occurs generally either in persons who have lived freely and injured their constitutions, or in those who are naturally weak renders it necessary that stimulants should be given very freely. Ether and ammonia are often required and may be given with decoction of cinchona. Quinine in combination with sulphuric acid is useful; and creosote is a valuable medicine in these cases on account of its antiseptic properties, and may be given in combination with the compound tincture of camphor. There is often in these cases severe attacks of pain requiring the repeated application of blisters; and hæmorrhage is another frequent symptom for which the same astringent remedies may be given as in ordinary cases of hæmoptysis. To lessen the fetor of the breath creosote may be inhaled, and chlorine is useful for the same purpose. Some further particulars in reference to the method of treating such cases will be found in the reports of three, detailed in the fourth chapter.

In endeavouring to relieve any symptoms as they may occur, we must also in this form of phthisical disease energetically sustain the strength, which is very apt to sink, by generous diet and the free use of stimulants, such as ale, porter, wine, or even brandy, and when we can bring the patient to a proper state for the employment of cod-liver oil, we should have recourse to this remedy.

Our attention having now been directed to the treatment of the different symptoms, complications and varieties of consumption which have a more or less close relation to the local disease, I would in concluding observe that in all our efforts to bring about the arrest, the suspension, or the cure of the disease, we must never lose sight of the all-important fact that it is a constitutional as

well as a local disease, the latter being the effect or consequence of the former, and that in treating symptom and complications we must keep this fact steadily in view, avoiding any treatment which might act injuriously on the general health and the constitution, and always recurring as soon as possible to those means pointed out in the first part of this chapter, and in that on the preventive treatment, which tend to improve the general health and invigorate the constitution.

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* * * * *

"But we are not limited to pathological revelations for all our arguments in favour of the curability of phthisis. There are, besides these, numerous instances on record of the recovery of patients, who had presented all the rational signs and symptoms of consumptive disease; and every year adds to the number of these. In the work before us Dr. Turnbull narrates thirteen cases. In two of these recovery took place from the first stage. In a third, the second stage had commenced, there was complete restoration of health, and the physical signs were reduced to a mere roughness of respiration, with prolonged expiration, and vocal and tussive resonance. In another, with hæmoptysis and cavity, there was recovery of the general health, and removal of the cavity. In another, in the third stage, the cavity remained patent, but contracted, and the health was restored. In another, where there were evidences of extensive disease and cavity, similar improvement took place in the system at large, and almost all physical signs were removed. In the remainder, the disease was arrested.

"How far these recoveries may be permanant, for recoveries they are, though it is too early to speak of them as absolute *cures*, we cannot of course say. But the experience derived from the first source will surely warrant the hope, that, by the avoidance of known exciting causes, the health may be retained at a moderately good point for the ordinary term of life. We have ourselves had, for six or seven years, a very interesting case under our notice, in which the gradual, but steady improvement has been most gratifying, — the signs of active disease which once existed being gone, snuffling bronchophony remaining as the almost sole evidence of local mischief. In this case, we believe that a cavity was healed by the forma-

tion of a thick lining membrane, and is now probably undergoing the process of contraction.

"These things surely teach us a lesson of no little importance; they cannot but tell us that despair is unwise, that we may hope even for our consumptive patients; and that, hoping, we are bound to use all the appliances which our art makes known, — medical, hygienic, climatic, — to bring about what some will call an *arrest*, what others will designate by the more cheering name of *recovery*, but what, call it as we may, is in numberless instances a priceless boon." Jan. 1851. Vol. vii. p. 175.

"Notwithstanding that the question of the curability of phthisis is the most important point of view in which the subject can be considered, yet when we turn to the works in the hands of the profession, although abundant information will be found upon the pathology, the diagnosis, and the statistics of the disease, — and much has been written, and ably written upon treatment, and upon prophylactic measures, — the writers, with few exceptions, have but lightly touched upon the question of its curability. In truth, the disease, both in and out of the profession, is regarded as so necessarily fatal, that observations or facts tending the other way are received with distrust, or at best with caution. Dr. Turnbull's aim in this publication is to endeavour to induce medical men to re-examine the question, and to encourage them to undertake the treatment of phthisis with the view of bringing about a cure. I am aware (he observes), that medical men receive any facts in reference to the curability of consumption with much judicious caution; but enough has been laid before the profession of late years to show that the subject is worthy of re-examination.....As long as consumption is regarded as absolutely incurable, it cannot be hoped that there will be persevering and close observation of the effects of treatment; for it is not to be supposed that those who do not see a reasonable prospect of arresting the progress of a disease, will exert their talents and energies in the accomplishment of such an object. The subject upon which Dr. Turnbull has written is one which, as we have already said, must interest more or less every one engaged in practice; his remarks upon treatment appear to us to be extremely judicious, and his work, we are sure, will be regarded as a useful contribution at the present time."

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